THE JOURNAL

OF THE

ANTHROPOLOGICAL INSTITUTE

OF

GREAT BRITAIN AND IRELAND.

April 13th, 1875.

Colonel A. Lane Fox, *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The following new members were announced:—The Hon. Lady Hamilton Gordon, 50, Queen's Gate Gardens; Lady Maude Parry, 7, Cranley Place, Onslow Square; Lady Claud Hamilton, 19, Eaton Square; Arthur Gaved Phillips, Esq., Cressington Park, near Aigburth, Liverpool; and John D. Loverdo, Esq., 7, Powis Gardens, W.

The following presents were announced, and the thanks of the meeting voted to the respective donors.

For the Library.

From the Author.—Researches in Prehistoric and Protohistoric Comparative Philology, &c. By Hyde Clarke.

From the Editor.—Cosmos, di Guido Cora. Vol. II. No. 6.

From the Editor.—Materiaux pour l'Histoire Primitive et Naturelle de l'Homme. Vol. V. Nos. 11 and 12.

From the Author.—Langue Basque et Langues Finnoises. By Prince L. Lucien Bonaparte.

From the Society.—Jahrbuch der K. K. Geologischen Reichsanstalt. Vol. XXIV. No. 4. Verhandlungen, ditto, Nos. 16 to 18, 1874.

From the Society.—Mittheilungen der Anthropologischen Gesellschaft in Wien. Band IV. No. 10.

From the Society.—Proceedings of the Royal Geographical Society. Vol. XIX. No. 3.

From the Society.—Transactions of the Society of Biblical Archæology.

From the Author.—Cave Hunting: Researches on the Evidence of Caves. By W. Boyd Dawkins, M.A., F.R.S.
From the Author.—Briefe aus der libyschen Wüste. By Karl A. Zittle.
From the Editor.—Archiv für Anthropologie. Nos. 3 and 4, 1875.
From the Author.—The Testimony of the Mounds. By T. E. Pickett.
From the Amsterdam Academy of Sciences.—Verslagen en Mededeelingen, Afd. Natuurk. Deel. VIII.; Jaarboek, 1873; Process-Verbaal, 1873-4.
From the Editor.—Revue Scientifique. Nos. 39, 40, and 41, 1875.
From the Author.—Anniversary Address, Geological Society of London, 1875. By John Evans, F.R.S., President.
From James Burns, Esq.—Researches in the Phenomena of Spiritualism. By William Crookes, F.R.S. Miracles and Modern Spiritualism. By A. R. Wallace.
From the Editor.—Nature (to date).

Mr. Bertram F. Hartshorne exhibited and described objects of Prehellenic age, from Hissarlik, the site of Homer's Troy; also ashes from the tomb of the Greeks and Trojans at Akshi Kioi, or Thymbra, Plain of Troy.

Discussion.

The President, speaking of the *θεὰ γλαυκῶπις Ἀθήνη* of Dr. Schliemann, said he ventured no opinion as to whether these words signified an owl-faced or a bright-eyed god. He felt convinced, however, from an examination of representations on the vases which Dr. Schliemann had figured in his book, that the figures were not intended to represent the face of an owl, but were simply the hasty representation of a human face, rudely depicted. The transitions from the realistic representation of a human face might, he thought, be clearly traced. With respect to the so-called stone idols with the human, or, as Dr. Schliemann supposed, owl, face upon them, he thought that they were evidently stone models of the vases, similar to those stone models which, in Egyptian graves, were put in to represent the vases which contained the viscera of the mummies.

On *the* People *of the* Long Barrow Period. By George Rolleston, M.D., F.R.S., Linacre Professor of Anatomy and Physiology, Oxford. [With Plates IV., V., and VI.]

Introductory Remarks.—In this paper I propose to give in detail a description of the examination of three Long Barrows situated near the little village of Nether Swell, in the county of Gloucester, prefacing this account by some general remarks—firstly, as to the physical characteristics of the people of the Long Barrow period; secondly, as to the possibility of

dividing that period into successive epochs; and thirdly, as to the rationale of the various modes of disposing of the dead observable in those early tumuli. In these prefatory remarks I shall not confine myself to the facts observed in the Gloucestershire explorations, but shall use, for purposes of comparison, my records of the investigation of similar barrows carried on by me in Yorkshire and elsewhere, with the valuable assistance of Canon Greenwell.

Looking at the osteological remains as a whole, perhaps the most striking point is the great disproportion in the sizes and the lengths of certain of the long bones, and, by consequence, in heights, of the male and female skeletons respectively. The male skeletons were very ordinarily about 5 feet 6 inches in height, as against a height of but 4 feet 10 inches attained to by the female. The average difference between the statures of males and females in civilised races is about half this amount, whilst a precisely similar disproportion is observable at the present day between the stature of individuals of the two sexes amongst savages.* The clavicles show the disproportionate smallness of the females even more strikingly than the bones

* The late Sir Andrew Smith, K.C.B., informed me, that from extensive observations, carried on for a period of seventeen years, in South Africa, he could assure me that the Amakosa Kaffirs to the eastward of the colony averaged near 5 feet 8½ inches, women 5 feet ½ inch. (See "Archæologia," 1870, vol. xlii. p. 457, where I put this observation, and a number of other measurements bearing upon this point, on record.) Gustav Fritsch, in his work, "Die Eingeborenen Süd Afrikas," s. 17, gives 171·8 cm. (5 feet 7½ inches) as the average stature of men of that race of Kaffirs just mentioned, and at p. 24 he says of the females: "Pflegen die weiblichen Individuen in der Entwickelung den mannlichen nachstehen was wohl in der unterdrückten politischen Stellung der Frauen seinen Grund hat;" but he does not give their exact stature. At p. 216 this author says, "Die Frauen der Ova-herero erscheinen in gleicher Weise wie der übrigen Süd Afrikanischen Nigritier in Vergleich mit den Männern unbedeutend," and at p. 277 he gives 160·4 cm. (5 feet 3 inches) for the average stature of ten male Hottentots, as against 144·2 (4 feet 8 inches) for the average attained from measuring four females of the same tribe. When, however, the stature of the male members of a race falls as low as that just given for the female Hottentot, the stature and other dimensions of the sexes appear to be nearly identical. This is the case with the Bushmen (see p. 398, *l.c.*). The measurements, however, given by Weisbach in the Anthropological part of the "Reise von Novara," 1867, p. 216, do not show that the discrepancy between the stature of the sexes of savage races rises in a direct proportion with their savagery, the greatest difference put there upon record being that between Java men, 1679 mm., and Java women, 1461·2, and amounting to 8½ inches, whilst the difference recorded between Australian men and Australian women is only 65 mm. (2½ inches). A similar disproportion, and one even greater than that recorded by Weisbach for the Javanese males and females, has been reported to me, as the rule amongst the Japanese; whilst, on the other hand, a "Report on the Aborigines of Victoria," 1859, p. 45 (*cit.* Davis, "Thesaurus Craniorum," p. 364), gives 5 feet 6 inches as the average height of eleven Australian men, as against 4 feet 10½ inches of an Australian woman. (See, however, Davis, "Phil. Trans." for 1868, p. 524.) The honourable position assigned to, or obtained by, the female sex amongst the Germanic races may be considered as testified to by the near approach to equality in stature

already alluded to. Professor Busk has recorded the small size and delicate form of the clavicles from the Gibraltar caves.*

To the relative size of the skulls in the two sexes in prehistoric times, the doctrine laid down by Retzius in 1845,† and re-affirmed in 1854 by Hüschke,‡ as to the upper and lower classes of modern society, and the civilised and uncivilised races of modern days, is ordinarily supposed to apply, *mutatis mutandis*. Broca, in his interesting paper on the "Caverne de l'Homme Mort," says§: "L'un des traits les plus remarquables de la série de l'Homme Mort, c'est la grande capacité relative du crâne des femmes." The head of the female occupants of this cavern, like the head of the rustic Dalecarlian females, as observed upon by Retzius, was but little—some 99·50 cub. cent. (6 cubic inches)—inferior in capacity to that of their male fellow Troglodytes, whilst the difference between the modern Frenchman of Paris and the modern Frenchwoman is more than twice as great as this amount. Where a woman is told by symbols, no less than by precepts, as Tacitus tells us,‖ the German women were told, *venire se laborum periculorumque sociam, idem in pace idem in prælio passuram ausuramque*, it is easy to understand, upon the principle of natural selection, how an equality, or, at least, a near approach to equality, in the physical, as well as in the moral and mental character of the sexes, may come to prevail, and how the weight and stature of the entire body in the female sex may approximate to the proportion of the male sex. Such, however, is rarely the case in savage tribes and times, and what we usually find, both among modern savages, as testified to by Weisbach,¶ and amongst prehistoric men, as I have found, is an exaggeration in the females of the disproportion which exists, even in civilised races, between their brain and their entire body weight, to the disfavour of the latter, which is relatively heavier in the other sex.

which, even in ancient times (see "Smith's Dictionary of Geog.," Art. 'Germania') was observed to exist between the sexes. Liharzig, however, most surely underestimates the difference when, in part following Quetelet and Bednär, he gives, in his great work, "Das Gesetz des Wachsthumes," p. 4, Taf. i., ii., iii., iv., 175 cent. (68·899 inches) as the average male stature, and 173 cent. (67·111 inches) as the average female stature. The rationale of all this lies in the earlier attainment of puberty by the female sex in our species, and the consequent early consignment of the females, in savage varieties of it, to child-bearing and hard labour. Mr. Dobson's paper on the "Andamans and Andamanese," published in the preceding number of the Journal of this Institute, p. 457, furnishes a good illustration of this principle. (See especially Plate xxxi.)

* "Trans. Internat. Congress Prehist. Archæology," 1869, p. 158.

† "Müller's Arch.," 1845, p. 89.

‡ Schädel, "Hirn. und Seele," p. 48.

§ "Revue d'Anthropologie," ii. 1, p. 45, 1873; and "Bull. Soc. Anth.," Paris, Tom. viii. ser. ii. p. 832, 1874.

‖ "Germania," 18.

¶ "Reise der Novara," 1867, 'Anthrop. Theil,' s. 222.

Without going into the familiar statistics which tell us that the brain attains very nearly its full weight at a very early age, I will just add that the average circumference of the head is shown by Liharzig* to be but about an inch less in either sex at the age of 14 than it is in adult life, the measurements being 54 as against 57 centimetres for the male, and 52·5 as against 55·5 for the female sex. Now, when the differences in treatment and mode of life, which have already been alluded to as accounting for the disproportion in the size of the entire body, observable among certain savages of either sex, do exist, they do not come into play ordinarily till after the age of 14, when the skull and its contents are incomparably nearer to their full size than the weight and size of the body are to their adult measurements; and it is obvious, therefore, that neither in civilised nor in savage life is there any *à priori* improbability that the brain and skulls of the two sexes should be at least sub-equal, however widely their entire body-weights may differ.

The female skulls labelled "Swell i. a," and "Swell vi. 2, 2," show, by their measurements given below, that some, at least, of the women of the Neolithic period, in Gloucestershire, stood in the same favourable relation of cranial capacity, as to the men of that time, as that which Broca has recorded on behalf of the women of the Caverne de l'Homme Mort, whilst the other bones from these barrows speak to the existence of opposite relations between the trunks and limbs of the two sexes. On the other hand, another female skull, "Swell i. 1, 22-9-1874," presents an inferiority of size as compared with the male skulls and the other female skull found in the same barrow and in its immediate vicinity, which may be expressed more clearly than by its detailed measurements, by saying, that previously to the restoration of the larger female skull, "Swell i. a," this smaller one could be got into its interior. This shows that as great differences might exist in savage races between the skulls of the sexes as Hüschke and Broca have noted as being usual in civilised times. These latter differences we may be allowed to ascribe to differences in education; the former may, perhaps, be explained by the relatively smaller-sized crania of female savages having belonged to women who, during their early childhood, and whilst their brains were being built up, had been subject to the disadvantages of scanty diet. "Savages," Mr. Bagehot has told us, "are the poorest of the poor;" and in a stone age, devoid of cerealia, scarcity of game, or a murrain among domestic animals, would bring famine alike upon the

* "Das Gesetz des Wachsthumes.," Taf. vi. and vi.; which table shows also that the female head is, at 21 months, 48½ centimetres in circumference as against 50 for the male.

families of the chief, with whom, I take it, we have here mainly to deal, and upon their serfs. The same privations, the subjection to which at and after the time of puberty, say 14 years of age, we have suggested as the cause of the disproportionately short stature of the women, would, if they came into play upon the same subjects when at the age of 14 months, or earlier, be competent to stunt the growth of their brains in like ratio. It is, indeed, as the late Professor Phillips once remarked, something to be wondered at, considering the hardships and scanty dietary to which all, or nearly all, wild races of men are more or less subjected, that their skulls and brains should be as large as we find them to be. "Ill-filled" skulls, consequently, to use the expressive epithet employed by Professor Cleland,* are not very rare in series taken from long barrows.

By an "ill-filled" skull, Professor Cleland tells us, he means a skull the exterior surface of which is marked by "a mesial and two lateral ridges on the roof, with flatness of the adjacent surfaces," and which has "its position of greatest breadth high up upon the parietal bones." The mesial carina may, I would add, be prolonged in such skulls over the frontal bone, and the frontal tubera may retain their infant-like prominence. To these peculiarities I would further add the presence of two depressions on the exterior of the skull, corresponding to convexities on its interior surface, as completing in many ancient and modern savage crania the character of "ill-filledness." One of these depressions is well known as the "post-coronal furrow," but inasmuch as the mesial vertical carina often developed in male skulls may be, and often is, continued along the line of the sagittal suture, so as to divide the so-called "furrow" into two parts, this name is not a happy one. The second of these depressions corresponds to a part of the parietal bone which lies a little above its posterior inferior angle, and immediately, therefore, above the part of the bone which is furrowed internally for the lateral sinuses. As in the former case, an inward ingrowth corresponds to the outwardly visible concavity, so that much such an appearance is produced as we can imagine would have resulted from pinching in the skull walls over this area, had they been plastic. I have been able to demonstrate the rationale of these depressions in the following manner:—By removing from a skull, with its brain *in situ*, the greater part of its roof, but leaving of this structure one antero-posteriorly-running arch of bone, corresponding to the sagittal, and two transversely-running half-arches, corresponding respectively to the half of the coronal and the half of the lambdoid sutures on one

* "Phil. Trans.," 1870, vol. 160, p. 148.

side, the exact position of all the main convolutions and fissures of the brain can be shown in their normal relations to these landmarks in the vault of the skull. It will make the matter plainer, and at the same time facilitate the production of similar preparations in other museums, to say that a brain, under such surroundings, presents something of the appearance in the skull which a living head does when subjected to measurement in such a cephalometer as that of M. Antelme.* By means of such a preparation it is easy to show that the post-coronal depression in the roof of the skull does not correspond, as supposed by the late Dr. Thurnam,† to the fissure of Rolando, but to the deep, and often wide, fissure which divides the superior frontal convolution into two well-defined lobes, and abuts upon the ascending frontal convolution, by a terminal bifurcation into two arms of considerable length. This fissure, as is well known, exists, and has often been described and figured in the brains of the anthropomorphous apes, in the crania of which animals the post-coronal depression is sometimes indicated when the sagittal carina is absent. Similarly, the second of the depressions which I have noted as commonly present in the postero-inferior part of the parietals of "ill-filled" skulls, may be seen to correspond to a certain multiradiate fissure frequently noticeable on the posterior or convex aspect of the middle temporo-sphenoidal convolution, but, as far as I know, not named by any of the numerous writers who have followed Gratiolet in describing the convolutions and fissures of the cerebrum.

Professor Bischoff, however, in his well-known paper on "Die Grosshirnwindungen des Menschen,"‡ speaks of certain fissures, without any well-defined character, which appear on the boundary between the parietal and occipital lobes, and says that they correspond to a "fissura occipitalis externa" which appears in the human fœtus, but is normally limited in duration to the seventh and eighth months of intra-uterine life. Though brachycephalic skulls have not, as yet, been proved to have been found in Great Britain in any primary interments in the barrows of which I am writing, and though brachycephalic skulls from the United Kingdom, and, indeed, I am inclined to think, from European countries generally, are ordinarily well- and not "ill-filled" skulls, it may, nevertheless, be allowable to say here that the "brachycephalic

* See "Mem. Soc. Anthrop. de Paris," Tom. i. pl. vi. fig. 2.

† "Nat. Hist. Review," April 1, 1865, p. 267.

‡ In the "Abhandlungen der k. Bayer. Akademie der Wiss." ii. Class x. Band ii. Abtheil., 1868, pp. 448, 450, 495; or "Separat. Abdruck," pp. 58, 60, 105, and Taf. x. fig. 7.

angustiores," as Professor Cleland would* call the brachycephali of several other parts of the world, frequently present the depressions of which I have been writing. An excellent instance of the postero-parietal inward pinching of the skull-walls was furnished to me quite recently by a Maori skull presented to the University Museum by Dr. Batt, the skull having a latitudinal index of 79, and possessing also markedly the contour which induced Retzius to class the Maoris as "brachycephali."

When we come, however, to compare the Long Barrow people with the still surviving inhabitants of the Southern Sea Islands, a comparison first instituted by Dr. Thurnam,† we must guard ourselves from supposing that "ill-filled" skulls are by any means the rule amongst the ancient British inhabitants of this country, as they are amongst the little favoured indigenes of Australia and Tasmania. Dr. Thurnam's own tables of the capacity of the skulls and the weight of the brains of the modern English and the ancient Briton,‡ which show that the larger quantities characterise the older race, furnish the needful qualification to his above-cited comparison. To this I would add, that in none of the Long Barrow skulls which I have had the opportunity of measuring has the altitudinal index been found to be lower than the latitudinal; and that a point of degradation, therefore, has been found wanting in this series which Professor Busk has observed to exist in some priscan dolichocephalic skulls, and in Tasmanian and Bushman crania amongst those of modern savages.§ The same facts may be expressed in another way by saying the "Sion Typus"‖ of His and Rütimeyer, a type which Rütimeyer¶ has spoken of as characterised by "Kräftigkeit und Würde," is by no means sparsely represented in the Long Barrow series, the larger female skulls corresponding very closely with the description given by those anthropologists of that type, whilst many of the male skulls, in which the smoothly-swelling globose outlines and rounded-off contours of the female skulls are replaced by muscular ridges, vertical carinæ, and foreheads sloping in correlation with heavy lower jaws, might be taken as fair, if not precisely accurate, representatives of the Hohberg type which is so closely allied to it.

A few pathological and teralogical peculiarities will be noticed

* See "Phil. Trans.," 1870, p. 148. † "Mem. Soc. Anth.," Lond., iii. p. 24.

‡ *l. c.*, vol. i. pp. 55 and 57.

§ See "Journal Ethn. Soc.," London, Jan., 1871, p. 467.

‖ For a description of the several types of prehistoric crania, as given by His and Rütimeyer, see their "Crania Helvetica," 1864; or Huxley on "Prehistoric Remains of Caithness," p. 103, seqq. 1866.

¶ "Jahrbuch der Schweizer. Alpen." for 1864, p. 393.

in the detailed account to be given below. It is interesting to note, that in no case have the wisdom teeth been observed to have come through previously to the ossification of the spheno-occipital synchondrosis. This is the reverse of what has been observed in certain savage races, ancient and modern, by M. Broca.* Perhaps the pastoral habits of these tribes may account for their conformity in this particular to what is usual in civilised races, a diet of milk, cheese, and flesh causing less injury to the teeth, and being less likely to call the wisdom teeth prematurely into use than one in which vegetable food forms a large factor. The bones of animals found in these barrows were, it may be noted, and again contrary to expectation, those of domestic breeds almost, or quite invariably.†

As regards the age of the Long Barrows, there is no doubt that, whatever other traces of the presence of man may be found in these islands, they are the earliest sepulchral evidence of his existence here. The huge cubical bulk of some of these tumuli is an *à priori* argument for their antiquity. Pristine or priscan man, like the modern savage, grudged no labour less than that which was spent on piling up a huge burial mound. My friend Mr. H. N. Moseley, naturalist on H.M.S. "Challenger," in recording his observations on the Kudang tribe of Australians living near Cape York, tells me that though they are destitute of almost everything in the way of property, having neither perforated stones to help them to dig roots—as have the Bushmen—nor boomerangs, nor tomahawks, nor any shaped stone implements, nor canoes; living, not on the available wallabies and phalangers, but on fish, reptiles, invertebrata, and vegetables; having the scantiest clothing, and sometimes, even in the cases of adults, none at all; being, finally, below savagery, as understood by a good judge of it‡—Professor Nillson—in having no chiefs; they nevertheless take great pains with the burial of their dead, marking out and adorning the graves with posts, and decorating them with the bones of the dugong. It is true that the Long Barrow people can be proved to have been in a higher state of civilisation than are these miserable Kudangs, by the purely quantitative considerations—firstly, that their barrows are so large as they are, and, secondly, that they contain so few skeletons.

But when a small number of individuals can get large structures erected for their lodgment, either when dead or alive, the society in which they have lived, or are living, has attained some elevation, however low, in the road leading upwards from sheer

* "Revue d' Anthrop.," ii. 1, p. 21, 1873.

† *Per contra*, in a pit within the British port at Cissbury, *Bos primigenius* and wild-boar bones were found.

‡ Nillson's "Early Inhabitants of Scandinavia," ed. Lubbock, p. 167.

barbarism. On the other hand, the poet of a civilised age, catching, as a poet sometimes does,* the essential features of early times with a singular, or even a scientific, accuracy, writes of a prehistoric funeral thus—

> Ergo instauramus Polydoro funus, *et ingens*
> Aggeritur tumulo tellus †—

whilst, at the same time, his friend Horace, and their common patron Mæcenas,‡ could utter their injunctions, and sympathise with the wishes expressed in the lines—

> Absint inani funere næniæ,
> Luctusque turpes et querimoniæ
> Compesce clamorem, et sepulchri
> Mitte supervacuos honores.§

Considerations of less generality, but not, perhaps, less convincing as regards the early date of the Long Barrows, are drawn from the facts, that in none of them in Great Britain has any metal implement been found, at least in connection with a primary interment; that tanged and barbed arrow-heads are similarly wanting in these tumuli, so far as Great Britain is concerned, though they have been found in such structures both in Denmark and in Brittany;‖ thirdly, that when they do contain burnt bones, those burnt bones are never found in urns; and, fourthly, that a very much larger proportion of the bones from these tumuli present the manganic oxide discolouration, so characteristic of antiquity, than has been observed in the series of bones from any other ancient burial places.

If it is easy and safe to speak of the Long Barrows *en masse* as being undoubtedly the oldest sepulchral monuments with which we are acquainted, much difficulty and danger attaches to any attempt at dividing the Long Barrow period into different epochs. If we know, as we do know on irrefragable evidence,¶ that two modes of disposing of the dead so diametrically different as inhumation and cremation have been practised

* See, in illustration of this, Wordsworth's lines, near the end of the eleventh book of the "Prelude;" or Tennyson's lines describing the condition of Britain in the interval between the evacuation of it by the Romans and the establishment of a new order of things.—"Idylls of the King. The Coming of Arthur," line 6, *seqq.*

† Vergil's "Æneid," iii. 62.

‡ The line, "Nec tumulum curo, sepelit natura relictos," ascribed to Mæcenas by Seneca, Ep. 92, justifies us in thinking that Horace, in the lines quoted in the text, was not merely reproducing the epitaph of Ennius—

> "Nemo me lacrymis decoret nec funera fletu
> Faxit Cur? volito vivu' per ora virum."

§ Hor. Od. ii. 21—24.

‖ See Thurnam 'Ancient British Barrows,' "Archæologia," vol. xlii. pp. 34 and 71, separate publication.

¶ See "Archæologia," xlii. p. 434.

contemporaneously, and by the same people, on the same area, it is impossible, it may be thought, to lay weight on any differences in sepulchral details for proving differences of date. Again, it may be urged, and should be borne in mind, that, in a country intersected by woods and water as Great Britain was in, and long after, the period we are dealing with, tribes living at what we now consider but short distances from each other, might be practically quite isolated, and develope thus entirely independent manners and customs. And, thirdly, though Diodorus Siculus has told us* that peace ordinarily prevailed between the multitudinous kings and chiefs in this island, we may set our knowledge of the condition of things, as to war and peace, prevailing among savages of the present day against this statement. I have been informed by the Rev. W. G. Lawes, who was for many years a missionary in Savage (Niue) Island, that he found that very few of the natives had ever been more than two or three miles from the place they were born in, the condition of blood-feuds which prevailed between the various septs and clans rendering it unsafe to do so. Analogous accounts are given to us by Australian travellers, and enable us to understand that very complete separation of one tribe from another may be compatible with this living in the immediate neighbourhood of, and contemporaneously with, each other. On the other hand, it is not impossible that the arrangements noted in some Long Barrows may indicate an approximation towards the practices characteristic of the Round Barrow period, and may, consequently, be considered as denoting that these barrows belonged to a later age than others in which no such arrangements have been detected. The great and cardinal difference observable between Long Barrows lies in their containing burnt or buried bodies. The immense majority of the Long Barrows in the south of England were erected for inhumation, whilst exactly the reverse of this has been the rule in the Northern Counties.

We will begin by asking whether there is any reason for supposing that the builders of these two kinds of Barrows, separated thus in space, were also separated in point of time? Some weight, though not much, may be laid upon the fact that cremation was, in Great Britain at least, the rule during the bronze age, as it is possible to suppose that the practice of cremation was borrowed by the people of the latter part of the stone age from the strangers who introduced them to the use of metal. A survey, however, of the records of the "Steingräber" of Scandinavia, Denmark, Schleswig-Holstein, and North Germany, such as is given by Weinhold in his "Toten-Bestatung,"

* "Biblioth. Hist.," v. 21.

1859; or in the 24th Bericht of the Schleswig-Holstein-Lauenburg "Gesellschaft für Alterthümer" for 1864, will not suggest that time rather than, or even in co-operation with, severance in locality, has had anything to do, necessarily, with the causation of this difference. Dr. Anderson,* however, appears to think that, in the long cairns of Caithness, burial may have preceded cremation; and it seems likely that the short cairns, whilst affined to the Round Barrows by this character of shortness, were at once later in date than, and yet genealogically connected with, the long cairns. And in the short cairns cremation was the rule. Some fragments of pottery, with a thong-pattern, closely similar to, or identical with, that so familiar to us from the round barrows, were found by me in a cremation long barrow near Market Weighton, in the East Riding of Yorkshire; and the same may be said of some pottery found with leaf-shaped arrow-heads, by Dr. Anderson, in a short cairn in Caithness. This may seem to give some stronger ground for supposing the cremation barrows to have been later in date than the other. Very similarly patterned pottery, however, is figured by Dr. Thurnam from a chambered long barrow at West Kennet, Wiltshire,† and its presence there would, of course, invalidate any argument which its presence in a cremation barrow might have tempted us to draw. That presence, however, in the Wiltshire barrow is supposed by Dr. Thurnam‡ to have been due to a subsequent intrusion into, or occupation of, this chambered barrow by the metal-using Belgæ. But the fact that much pottery, elegantly marked and delicately made, albeit not lathe-turned, has been found in Continental barrows of the stone period,§ may make us think Dr. Thurnam's suspicion somewhat unreasonable, and, if we do think it so, the argument from the presence of such pottery in the cremation long barrow in the East Riding falls to the ground.‖

If it is unsafe to suppose it to be anything more than a probability that the practice of cremation may be considered to mark a later, and the practice of inhumation an earlier, epoch in the

* "Proc. Soc. Ant. Scot.," June, 1868, p. 508.

† "Cran. Brit.," Pl. 50, p. 3.

‡ "Archæologia," xlii. p. 72. § See Weinhold, *l. c.*

‖ As it is but a few years since it was currently held that no pottery was to be found in the long barrows, at all events of the north of England, it may be well to say that a coarse, particoloured pottery, containing large fragments of pounded pebbles and shells, which we may suppose to have been manufactured for domestic purposes, is very abundantly represented by shards in the long barrows both of the north and south of England. Pottery of similar paste, but rolled into finger-shaped masses, was found in some abundance in a long barrow (*Swell i.*) in Gloucestershire. Similar pieces of pottery, used in the manufacture of other *fictilia*, have been shown me by Sir Henry Dryden, Bart., from ancient structures in Brittany.

the unchambered long barrows were anything but contemporaneous with the chambered. But a question may arise as to whether those long barrows in which the receptacle for the dead took the shape of a closed "cist," without any passage or gallery leading to the exterior, as in the chambered barrows, may not, as being more nearly approximated in shape to the cists in the round barrows of later times, have been also nearer to them in point of date. The Long Barrow in which the closed cist has taken the place of the galleried chamber is by no means so common as either the chambered barrow, or the unchambered, used for inhumation, or the cremation long barrow. A very competent antiquary* has expressed himself to me as doubting whether *true* cists are ever found as the primary places for interment in such barrows. Several instances, however, have been put on record in which there seems to be much reason for accepting the description of the existence of such cists so placed. The account of the exploration of the Littleton Drew Long Barrow, successively by Sir Richard Colt Hoare and by G. P. Scrope, Esq., M.P., given in the description of Pl. 24 of the "Crania Britannica"; and that of the exploration of the tumulus at Charlton Abbots, given by L. Winterbotham, Esq., in the "Proceedings of the Society of Antiquaries," April 19, 1866, appear to me to give trustworthy histories of such discoveries; and other examples may be found in Dr. Thurnam's paper on 'Long Barrows' in the "Archæologia" for 1869.

Weinhold† divides the Hünenberge into two classes, accordingly as they contain "cists," or chambers with galleries.‡ In a long barrow, "Swell vi.," I found what appeared to me to have been a closed cist, containing a considerable number of human remains, and also the skeleton of a dog, as will be related at length further on. This receptacle had been much disturbed, and I shall not, therefore, lay any weight upon the presence, a short distance above it, of some fragments of finer, thong-marked pottery than I have seen from any other long barrow; still, some traces of a passage or gallery leading to it would, I think, have been discovered if they had existed. The bones from this, as also from another somewhat similarly dilapidated sepulchre in the same barrow, had less of the manganic oxide discolouration than was observable upon bones from the galleried chambers in this district; and though this may be explained as being due to some chemical difference in the soil,

* So Nillson, *l. c.* p. 166, says, "Every tomb had its side gallery."

† *l. c.* p. 6.

‡ So Engelhardt, in his "Catalogue of the Antiquities in the Copenhagen Museum," speaking of the "Grabkammer of the stone age," says it "hat *bisweilen* einen niedrigern bedeckten Steingang" (p. 9, ed. 1872).

Long Barrow period, there is still less reason for suggesting that it is also possible that it may indicate a lesser antiquity in the bones so affected, as compared with the others.

On the whole, I am inclined to think that indications are not wanting which suggest to us that inhumation will ultimately be shown to have been the earliest mode of burial practised in these, as yet the earliest of known sepulchres; that inhumation in galleried chambers was probably the earliest variety practised, at least where the necessary slabs for the construction of such chambers and passages were available; but that burial without burning, and also without any cist or chamber whatever, may, in other districts not so conditioned, have been contemporaneous with burial in chambers; and finally, that inhumation in cists without passages leading down to them, and cremation, mark later epochs in the Long Barrow period. The questions are in need of further evidence for their definite solution, and they are beset with numerous difficulties and sources of fallacy.

Coming, in the third place, to a consideration of the modes of burial observable in long barrows, and the rationale to be given of them, I have to say that one peculiarity appears to me to characterise all long barrows, whether they contain burnt or unburnt bodies, and that this peculiarity is, that whether the number of bodies be large or small, they occupy but a relatively small part of the entire tumulus. In other words, the bony remains, burnt or unburnt, are huddled together in short compass, whilst, so far as we see on the first contemplation of their arrangement, they might have been disposed with little or no more trouble at intervals throughout the tumulus. A segment or two of the entire length of the barrow has been employed for the reception, all the rest has been erected for the honour of the dead. In a long barrow near Market Weighton, containing some twenty-six burnt skeletons, the whole number were found within a distance of 60 feet from its east end; of these twenty-six, twenty-one were buried in a segment of 32 feet in length, and of these twenty-one, seventeen lay in a length of 17 feet. In another barrow, also of the cremation variety, near Kirkby Stephen, and 179 feet in length, the whole number of burnt bodies amounted only to seven, but they were crowded into a segment of the barrow which was but 3 feet 6 inches wide and 12 feet 6 inches in length. A chamber 7 feet by 4 feet, in one of the Gloucestershire barrows, "Swell vii.," contained, even after having been exposed to rifling by the rustics of the neighbourhood during a period of many years, remnants of no less than nine adult skeletons. Another receptacle which I examined in another barrow ("Swell vi.") close by, and which I believe to have been a cist, though,

from its having been disturbed, it is a little unsafe to speak quite positively, contained within a space of 5 feet 6 inches by 4 feet, parts of two adult unburnt skeletons, male and female respectively, parts of three children about 7 or 8 years of age, and the skeleton of a dog buried with the woman's skeleton; whilst a similar receptacle in the same barrow, examined by Canon Greenwell, contained parts of no less than ten human skeletons, all but one of which had belonged to adults, packed together within an irregularly-shaped space (for which see plan), which was 8 feet 6 inches long, and 4 feet broad at one end and 3 feet at the other. When these crowded masses of bones are looked at *in situ*, they strike the observer as having certain sets amongst them left in their natural relations and juxtapositions, whilst certain other bones have been somehow dislocated away from their normal connections. The upper cervical vertebræ, for example, I find myself to have noted as retaining, in many cases, their position of approximation to the lower jaw and the base of the skull; the same is recorded occasionally of a larger or smaller number of the dorsal and lumbar vertebræ, and of the patellæ in their relations to the tibiæ and femora, whilst portions of the pelvis, of the feet, of the humerus, and of the scapular arch, may also be found all close together. It may be well to give here an extract from the notes taken of part of the excavation carried out in a cremation Long Barrow near Kirkby Stephen, in Westmoreland:—

"Monday, Aug. 24, 1874.—Two strong adult men were represented, within a circle of 1 foot 6 inches diameter, by portions of their lower jaws, of their skulls, of their second cervical vertebræ, and of their scapulæ. A fragment of an occipital bone was seen looking upwards, with the proximal end of a right humerus on one side of it, and the distal of a left one on the other, and portions of an atlas also in relation with it. But fragments proving the presence of two odontoid vertebræ, and shortly afterwards of two lower jaws, were found close by, as also an os calcis and an astragalus, which last were less than an inch from a clavicle, whilst, finally, a number of vertebræ were found in apposition, and parts of two scapulæ were in relation with the head." In the case of a third skeleton, out of the seven found in this barrow, a patella, the only one found in the entire set was found in apposition with the proximal end of a tibia. In the cases of the bones whence evidence was drawn for the presence of four other burnt skeletons in this large barrow, it seemed from their condition of arrangement, or rather disarrangement, that they must have been disarticulated before they were burnt.

The plan employed for burning bodies in the cremation long barrows examined by me, with the help of Canon Greenwell, as also in others examined by him previously and independently, was that of packing the bodies—whether fresh or dried, whether still in continuity, or disarticulated, along the central axis of the barrow—together with wood and stones. The combustible and transpirable mass thus formed reached half, or much less than half, the entire length of the barrow. It was bounded and supported on either side by the lateral masses of the barrow, in which, in some barrows, a system of flues for favouring draught appears to have been provided by the mode adopted for arranging the large stones of which they were made up, and which, in other barrows, appear to have been made up of turfs which would serve as non-conductors by abutting upon the central combustible strip. In the barrow near Market Weighton the turfs must have been arched over the central strip, thereby greatly favouring calcination, as in a kiln, whilst externally they were supported by lines of stone rubble, which kept them in place. This short description is sufficient, perhaps, to convince the reader of what examinations, lasting many days, convinced the writer was the case—viz. that whatever was done in a cremation barrow with more or few skeletons, was done at one time, once and for all.

There have been three theories put forward to account for the facts observed as to the human remains found in Long Barrows The first of these may be called the Successive Interments Theory. It is expounded by Professor Nillson,* who however, deals only with non-cremation, galleried tumuli. Now the very *raison d'être* of a gallery is the facilitation of successive interments; but the construction of a cremation barrow is incompatible with such an object. The second of these theories may be called the Ossuary Theory; and this, though combated by Professor Nillson, is not incompatible with his own theory, and, indeed, as regards chambered barrows, ought to have that theory combined with it. There is much evidence in its favour, as regards every variety of long barrow.

The third theory may be called the Human Sacrifice Theory, for which much evidence may be adduced from the practices of other nations, but for which the remains, as far as I have been able to judge, from British barrows do not furnish any proof.

In my account of one of the long barrows (Swell vii.), I shall describe how a skeleton was found lying upon the remains of two others, which had undergone some disturbance when the first was put in; and there is no need to labour a proof of the

* *l. c.* pp. 167, 168.

statement that the wish* of one man to be laid in the same tomb with another, his friend or his patron, is a *vera causa* for successive interments. But if the arrangement of the bones, the existence of the passages or galleries, and the feelings of human affection, as embodied in literature, and detectable, also, in ourselves, all alike speak in favour of the practice of successive interments, evidence of an equally cogent character can be brought forward to show that bodies were stored as they fell in by the death of their owners, and then buried or burnt simultaneously. The description of the structure of a cremation barrow proves the point of simultaneity, but till the theory of human sacrifice be disposed of, the acceptance of the ossuary theory cannot be held to be necessitated. Dr. Thurnam was the principal advocate of the theory† which accounted for a multiplicity of skeletons, of different sexes and ages, being found aggregated together in these barrows, by supposing that the majority of them were the skeletons of slaves or captives, slain to keep the chief company on his journey to, and in his sojourn in, the other world. That such rites were practised by the ancients, that even in the time of Homer they were looked upon as repugnant to the moral sense of mankind,‡ but that they retained vitality enough to give birth to the even worse atrocity of gladiatorial shows, we have evidence in abundance to show. But we have no evidence to show that the bones of the slaughtered victims were allowed a place in the same cist, chamber, or urn, with those of the great man in whose honour they had been massacred. Achilles, indeed, gives precise

* This wish was expressed by the prophet of Bethel in the simple injunction, "Lay my bones by his bones" (1 Kings xiii. 31), and is put into the mouth of Patroclus by Homer (Iliad, xxiii. 83, 84), in the beautiful lines—

Μη ἐμὰ σῶν ἀπάνευθε τιθήμεναι ὀστία Ἀχιλλεῦ
Αλλ' ὁμοῦ, ὡς ἐτράφημεν ἐν ὑμετέροισι δόμοισι.

The imagery of the 32nd chapter of Ezekiel is borrowed from his recollection of successive interments.

†See "Mem. Anthrop. Soc.," Lond., vol. i., or pp. 28 & 68 of separate publication; "Crania Britannica," pl. v., l., lviii., lix.; "Archæological Journal," vol. xxii., June, 1865; "Archæologia," xxxviii. p. 413, xlii. p. 25, seqq. 1869. In this latter place Dr. Thurnam has collected a large number of passages from ancient and modern writers, in illustration of the practice of immolating victims at funerals. To these passages I would add one from Tertullian, "De Spectaculis," xii.—"Olim quoniam animas defunctorum humano sanguine propitiari creditum est captivos vel mali status servos mercati in exequiis immolabant. Postea placuit impietatem voluptati adumbrare. Itaque quos paraverant armis quibus tunc et qualiter poterant erŭditos tantum ut occidi discerent; mox edito die inferiarum apud tumulos erogabant. Ita mortem homicidiis consolabantur."

‡ See "Il.," xxiii. 176.

injunctions* as to keeping the bones of Patroclus separate and apart from those of the twelve Trojan youths, the two dogs, and the four horses, slain and burnt with his body. Sometimes we find human bones scattered here and there, not only on the surface, but deep down in the mass of barrows, and I have thought that such bones, when this presence cannot be accounted for by any secondary and shallower interment, or any disturbance of a primary one, might perhaps have been parts of the skeletons of such victims. There is, however, a wide difference between leaving the remains of slaughtered victims lying about on the surface of the ground, and placing them inside a sepulchre, and the former of these modes of treatment is, I submit, the more natural one, and the more likely to have been adopted, for many reasons. The bones of a wife or concubine, who may voluntarily or half voluntarily† have given up her life at her master's funeral, may have been allowed to lie with his; but this supposition would not explain the facts of the numbers, and of the presence of both men and women in varying proportions in these interments.

Dr. Thurnam, however, based his support of the human sacrifice theory, not merely upon literary evidence, but also upon the appearances which the bones themselves from these barrows presented. Some of these bones are in the Oxford University Museum, viz. those from Ebberston,‡ referred to as being calculated to "convince the most incredulous;" and others in the Cambridge University Museum I have been, by the kindness of Professor Humphry allowed to inspect and examine. I have to say that, after repeated and careful examination of these bones, with the assistance of skilled anatomists, I am entirely convinced that they do not fairly bear the interpretation which Dr. Thurnam has put upon them. The "perfectly sharp and clean" edges of the broken bones, and the "porcellaneous character" of the fragments themselves, I happened one day to see reproduced by an accidental breakage which occurred in one of the skull-bones from the Market Weighton long barrow, and my eyes were opened to the necessity of no longer taking the theory in question for granted. On further examination, and after repeatedly submitting the Ebb-

* Οστέα Πατρόκλοιο Μενοιτιάδαο λεγωμεν
Εὖ διαγιγνώσκοντες, ἀριφραδέα δὲ τέτυκται
Ἐν μέσσῃ, γαρέκειτο πυρῇ, τοὶ δ'ἄλλοι ἄνευθεν
Ἑσχατιῃ καίοντ 'ἐπιμιξ ἵπποι τε καὶ ἄνδρες.
Καὶ τὰ μὲν ἐν χρυσειῃ φιαλῃ και δίπλακι δημῷ.
Θείομεν.—Il. xxiii. 239.

† See Anderson, "Proc. Soc. Ant. Scot.," May 13, 1872, p. 524.
‡ "Mem. Soc. Anth.," London, *l. c.*

erston series, of which Dr. Thurnam wrote, *l. c.*, to the inspection of others in whose judgment I had confidence, I was compelled to give the theory up.*

What has compelled me to the acceptance of the Ossuary theory, is, firstly, its all but absolute indispensability for the explanation of the appearances met with in cremation Long Barrows; secondly, the fact that, in many receptacles for unburnt bodies, the arrangement which those bodies present is not that which they would have if they had been, one after the other, disturbed to make room for fresh immigrants; thirdly, the fact that the practice of storing bodies in provisional receptacles, *en attendant* a final sepulture, is one which has been practised all over the world; and, fourthly, a consideration of the circumstances which would be likely to throw a number of corpses upon the hands of a tribe in the Neolithic age, and the difficulties which those very circumstances would put in the way of their disposing of them at once.

The first three points need no further explanation; upon the fourth I will say a few words. At the present day, with all our means and appliances, severe cold produces a high mortality; even in a small village several old people may be sometimes reported to us as being all lying dead within its precincts at one time. If this is the case in modern England, what must have been the case in neolithic Britain? and in the presence of severe frost, and possibly deep snow, how was such a population as a tribe of the Long Barrow period to get rid of its dead out of its sight? I owe a reference which throws much light on these questions to Dr. Joseph Anderson's paper in the "Proceedings of the Society of Antiquaries of Scotland," May 13, 1872, p. 526. This reference is to a passage in King Alfred's version of "Orosius," where we read that it was the custom of the Esthonians to keep the body of anyone who died one month, or even two months, or, in the case of kings, even half a year, before burning it.

In following up this line of illustration, I came upon the following lines relating to the manners and customs of the Russians, and addressed, from Moscow, to Spenser, by a lesser

* So, I think, has been Dr. Engelhardt, who has been quoted in favour of it. His last account of the great Tumulus at Borreby, in the 1872 edition of his "Catalogue of the Danish Antiquarian Museum," runs thus, p. 10:—"43 G. Inhalt einer Steinkammer bei Borreby auf Seeland, welche bis an die Decksteine mit unordentlich durcheinander gemischten Skelletttheilen von wenigstens 70 Individuen angefüllt war; mitten im Begräbniss raume fand man mehre gespaltene, und vom Feuer angebrannte Menschenknochen und auf dem Steinpflaster des Bodens, unter Kohlen und Asche, gebrannte Menschenknochen und das Geweih eines Rehbock's, *welches letztere vielleicht vom Opfermale bei der Einweihung der Grabstätte herrührt.* Neben den Knochen im Grabe lagen Werkzeuge von Stein und Bein, Perlen und Topfscherben."

poet, one G. Turberville. They may be verified by a reference to "Hakluyt's Voyages," vol. i., ed. 1809, p. 433. Speaking of a Russian winter, Turberville says:—

> The bodies eke that die unburied lie they then
> Laid up in coffins made of firre, as well the poorest men
> As those of greater state. The cause is lightly found,
> For that in winter time they cannot come to break the ground.

Returning from comparative civilisation to a consideration of what would be likely to happen in still earlier days, we may say that, out of a number of bodies stored up till it should be possible or convenient to deposit them finally in a tumulus, some would become more, some less, some, perhaps, entirely disjointed; for the practice of stacking or storing the dead, though originated probably by the necessities of cold weather, would be continued, as well recognised principles would lead us to expect, irrespectively of times and seasons, when it was once well established. Thus the partial retention and partial loss of the natural connections of the bones observed in these barrows would both alike receive an explanation, and be seen to depend upon the greater or less resistance which their ligaments had offered to the attacks of putrefaction.*

I will now commence a detailed account of the examination of three Long Barrows, situated near the village of Nether, or

* M. Arthur de la Borderie, Député à l'Assemblée Nationale de France, in his work, "Les Brétons Insulaires et les Anglo-Saxons du v. au vii. Siécle," when giving (p. 622) a translation from "Les Bardes Brétons," relating to the death of Kendelann, puts in italics the following words:—"*Son squelette séche encore au coin du feu.*" And in commenting upon them says—"Est-ce à dire que les Brétons eussent conservé jusqu' alors le vieil usage, décrit par Strabon, de faire dessécher les os de leurs parents et de les garder dans une coffre au coin der feu domestique?" I have not succeeded in verifying this quotation, which appears to have exceedingly important bearings on the subject of ossuaries, or at least upon that of the practice of keeping the dead body accessible for some time after death, a proceeding which terminates usually in its removal to an ossuary.

The following references to statements as to the use of ossuaries in ancient and modern times may be found useful:—

Phineas Fletcher, "Eclogues," p. 10, ed. 1771, 12mo.
G. Turberville, in "Hakluyt's Voyages," vol. i. p. 433, ed. 1809.
Falkner cit. Cunningham, "Nat. Hist. Straits of Magellan," pp. 146, 147.
Lukis, "Archæol. Journal," 1845, vol. i.
Anderson, "Proc. Soc. Ant. Scot.," May 13, 1872, p. 526.
Nillson, "Early Inhabitants of Scandinavia," ed. Lubbock, pp. 162, 163.
Grey, "Journals in North-West and Western Australia," i. 257, 1841.
Eyre, "Journals in Central Australia," ii. p. 344, 1845.
Finlayson's "Mission to Siam," p. 235, 1826.
M. Boye, "Proceedings of Soc. Ant.," Lond., ii. ser. iii., p. 310.
"Schoolcraft," i. 80, 102.
D. Wilson, "Prehistoric Man," 1865, p. 488.
Musters, "Journal Anthrop. Inst.," Lond. i. 2, Oct. 1871, p. 201.
McDonald, Ibid., p. 214.
McDonald, Ibid., ii. 2, Oct. 1872, p. 176.
Lubbock, "Prehistoric Times," ed. 1872, p. 269.
Wood, "Cruise in South Seas," p. 115, 1875.

Lower Swell, near Stow-on-the-Wold, in the county of Gloucestershire. Three persons, the Rev. David Royce, Canon Greenwell, and myself, were concerned in their examination. A large part of the investigation of the barrow first explored, and hereinafter spoken of as Swell i., was superintended by Mr. Royce alone, in the years 1867 and 1868; and to his report of what he observed in it I am greatly indebted for much of what relates to its structure. To his zeal and intelligence, exercised for a period of no less than eight years, we owe the preservation not only of valuable records of facts, but of many osteological and other relics which might otherwise have been scattered and lost. To Canon Greenwell's suggestions and advice, as well as to his very efficient help in other ways, and notably in the examination of the third barrow (Swell vii.),* at which I was only able to be present on a very few occasions, I owe a large debt.

Swell i. (Pl. iv.).—The first of the three barrows examined is situated in a field which has been under cultivation from 27 to 30 years, though it is still known as the "Cow Common." The other two barrows were found by us in 1874 to have the heart-shaped or "horned" eastward ends, which are so well known to us from Dr. Anderson's † descriptions of the "horned cairns of Caithness," as also from Dr. Thurnam's ‡ accounts of the tumuli at Uley and Belas Knap, in this very county of Gloucestershire. There is, as it appears to me, a great probability that the barrow, Swell i., was originally constructed with the same outlines and contour as these other barrows; but the eastward end had been much reduced in size by removal of the stones of which it was made up, to fill up an adjacent quarry, in the years 1867-1868; and in 1874 some indistinct traditions as to the existence in former years of curved walling at that end, were the only main specific basis—as distinct from the general likelihood arising out of its other still remaining points of resemblance to typical horned barrows—for holding that it probably had been one. Making allowances, however, for the demolitions which had taken place in the years 1867 and 1868, and, possibly enough, in years long before them, we shall not be far wrong in saying that the extreme length of the barrow from E.S.E. to W.N.W., the direction of its long axis, was from 150 to 155 feet; and that its breadth at its eastward end

* The three barrows have been numbered Swell i., Swell vi., Swell vii.; the numbers intervening between i. and vi. having been assigned to other barrows not treated of here.

† See Anderson, "Ancient Remains of Caithness." Mem. Soc. Anth. Lond., vol. i. p. 474, 1865. Proc. Soc. Antiq. Scotland, 1866-1868.

‡ See Thurnam, "Crania Britannica," Pl. v. Mem. Soc. Anth. Lond., 1865. "Archæologia," vol. xlii. p. 209.

was 77 feet; at its highest point, a point very near to the line occupied by the chamber which, as will be seen, gives the chief interest to the barrow, 69 feet; and at its westward end, 40 feet. The greatest height of the barrow, as at present existing, is about 5 feet. The ground occupied by the barrow falls slightly from the west eastwards.

In 1867, and previously to the removal of the eastward end, the Rev. David Royce discovered in the barrow a chamber of about 3 feet square, as reported, but probably of even smaller dimensions, with a gallery or passage leading down to it at a point close to its northern boundary line, and 55 feet from its east end. In this chamber were found three skeletons, and in the immediate neighbourhood, either at the same time or in 1874, parts or the whole of five more skeletons, making a total of eight, for whose reception or honour the tumulus had been piled together. The osteological remains, and the surroundings in which they were found, will be described in greater detail further on. The barrow was found to be bounded (irrespective of talus) on its north and south sides by a wall made up of the oolitic flags of the district, laid in horizontal courses; the presence of a wall was not made out at the west, nor, as already stated, at the east end. The wall was about 2 feet 3 inches in height on the south side, but was considerably less on the north, where it was in some places reduced to as few as three or four courses of its constituent flags. The north wall turned inward, to form the passage just mentioned as leading to the skeleton-containing chamber. The walls of the chamber consisted of flagstones of much larger size than those used for forming the boundary walls of the tumulus, the largest being as large as 3 feet 6 inches by 2 feet 4 inches. Some of these stones had been set on edge; some, probably, had served as covering stones. The walls of the chamber thus constituted were set inside the walls of the passage formed by the inward prolongations of the north wall. A reference to the ground plan (Pl. iv. fig. 1) will make these relations clearer. But it will also seem to show that this barrow was broader at the level of the chamber than at that of the extreme eastward end; that, in other words, this barrow was spindle-shaped, instead of being, as is commonly the case in long barrows, club-shaped, or, as in the horned cairns, heart-shaped, with the broader end eastwards. It is true that on measuring the entire mass of talus which the rubble had formed at the east end, the space thus curved was found to be 6 or 7 feet wider than the transverse measurement of the barrow, taken across the chamber. But the plan shows the limitary walls, both north and south, taking a set inwards as they pass eastward from that line. Mr. Royce

has suggested that these portions of the limitary walls do not represent the original boundary walls of the barrow for the 55 feet or so from its eastward end, but that the original outer wall ran along a line more or less continuous with that of the walling to the westward of the chamber, and that it has been removed in some unrecorded denudation of the mound. The more internally placed and still persistent walls might be but layers of stone, arranged by the original builders of the barrow for purposes of self-protection against the slipping and sliding of the rubble; just as we often observed our modern labourers arranging the stones of these barrows while we were exploring them, the same considerations of personal convenience having operated upon neolithic, as they do upon modern, stone-heavers.*

This supposition would remove the stumbling-block constituted by the representation of a long barrow tapering towards its eastward end. The ground plan (Pl. iv. fig. 1), however, represents, in continuous lines, the actual facts, as seen and measured by us; and a plan of a Barrow with a double wall at its east end, such as the Uley Barrow appears to have been,† may represent those facts as they were previously to interference. Our ground plan (Pl. iv. fig. 1) shows this conjectural restoration by dotted lines.‡ The wall of the passage which ran outside the eastward wall of the skeleton-containing chamber, I think, from a comparison of my own notes taken on the spot in 1867 with my observations made in 1874, must originally have been continued southwards as far as the south wall of the barrow, as is indicated by a dotted line in the ground plan. Looking at the barrow in 1867, I noted that a single wall, starting from the south side, "crossed the width of the heap to the opposite side, where the 'cist' was;" and a MS. note of Mr. Royce is to very nearly the same effect, viz. that "there was an appearance of walling in the very centre of the barrow, and almost through it in a line with the east end of the cist; the face of the wall was towards the west, not east." A segment of this wall, about 4 feet long, existed

* This observation of the practice of modern labourers should put us on our guard against assigning too much importance to, or searching too curiously for, a meaning for every line of walling met with in barrows made of slate-shaped stones. As regards the outer boundary walls even, the mere necessities of the case will account for the greater definiteness which they possess at the sides and west ends; though, it is true, they do not account for the peculiar heart-shape which they assume at the east ends of such barrows. For the double curve thus described, the fact that an entrance to a doorway, or gallery, or passage could thus be made with facility, may possibly account. And this contour might, on the well-known principle of "survival," be retained even when, as in the Swell barrows, there was no gallery nor chamber at the east end.

† See "Crania Britannica," Pl. v.; "Archæologia," xlii. p. 49, *ibique citata.*

‡ Compare Dr. Anderson's Plan, vii., "Proc. Soc. Ant. Scot.," *l. c.*

in 1874, in continuation of the passage wall southwards from the chamber it bounded; and another segment, about 2 feet long, took origin opposite this segment, and was prolonged northwards from the southern wall; but the intervening length, to which the testimony of one of our workmen spoke, as well as my own notes and those of Mr. Royce, had disappeared in 1874. What, however, is certain is, that westward of a line corresponding to the dotted line, *c*, in the ground plan, the barrow was crossed from north to south by a zone or strip, varying in width from 2 feet 8 inches in the region of the chamber to 3 feet 6 inches in the middle line, and differing from all other segments of the entire length of the barrow in the important particular of lodging eight human skeletons. In the chamber contained in this transverse zone were found, in 1867, parts of three skeletons, two being skeletons of adults, and one a skeleton of a child. At the same time a third adult skull was found immediately to the north, and a fourth immediately to the south of the chamber; whilst outside the chamber again, but at a greater distance to the south than the skulls, were found two headless bodies, "one about the centre of the barrow, west of the supposed central walling, and one more to the south-west." The place of this latter skeleton, which was reported to me, in 1867, as having been the skeleton of a woman, is marked in the plan (Pl. iv. fig. 1) by the word "bones"? And the apposition of this note of interrogation, borrowed, like the words given above in inverted commas, from Mr. Royce's notes, make me think that the place assigned to these bones may be a little farther south than it ought to be. Working in 1874 in this transverse zone, we found, at points varying from a spot a little south of the middle line of the barrow, four skeletons, one of an aged woman (described below under label "Swell i., 122, 9, 1874"), one a male skeleton without a head, and two skeletons of children. Portions of the headless skeleton found by us in 1874, fitted with fragments of bones found and given to me by Mr. Royce in 1867; and the later headless skeleton, therefore, may be supposed to be identical with one of the two discovered earlier, which one its discoverers did not think it worth while to remove in its entirety. But what is of consequence is to note, that after a very careful examination of all the bones obtained from the chamber, and from the transverse zone crossing the barrow in the meridian of the chamber in the year 1867 and in the year 1874, we proved that there was no proof in the entire assortment of the existence of more than eight skeletons, three of which had belonged to children, and five to adults. It is well known that many large barrows were erected for the purpose of containing only just such a chamber as the one

found in this one, and for lodging only just as few bodies as—or, indeed, often fewer than—the number found here. But it is also well known that many of these long barrows contained more than one, or even two, sepulchral receptacles, "chambers," or "cists;" and such an additional receptacle for additional dead may have been constituted by a somewhat enigmatical structure found in 1868, but destroyed before 1874, and represented in fig. 2, Pl. iv., taken from an anastatic drawing of Mr. Royce's. This structure, when discovered April 10th, 1868, during the process of carting away the eastward end of the barrow, was described as being a "diagonal oval chamber, built of small slates, after the manner of the inclosing outer wall," and as being 6 feet by 4 feet 8 inches in transverse measurements. As the figure shows, it contained no upright flags, and, as the ground plan shows, it was 25 feet nearer to the east end of the barrow than the chamber already described, and a little to the north of the middle line. When discovered, it contained the following relics: the distal end of the left radius of an adult man; the mid and ungual phalanges of an adult human subject; the clavicle of an infant; the upper molars of an ox; the last lower molar of a sheep; and the phalanx of a small carnivore, probably a weasel, as verified by Professor Owen for Mr. Royce, April 27th, 1868; and two flint flakes. Though the fact of this penannular structure having been so far away from the line of the chamber already described makes it improbable that the two bodies represented by the bones just mentioned could have been of the number of eight found to the west of that line, it is of importance to note that there is no osteological impossibility in the way of considering them to have so belonged to them. But in favour of their independent origin there is an additional fact, in the possession by me of a very much worn human temporal bone, which can scarcely have belonged to any of the five adult skeletons already spoken of, but which came from some part of this barrow, it is uncertain which.

If much is left in comparative uncertainty as to the bones contained in this structure, much more is left in uncertainty as to the interpretation of the structure itself. It is possible that when discovered in 1868 it was even then but the remains of a much larger, or, at least, a more perfect structure; and that larger or more perfect structure may have been either the remains of a heart-shaped or horned east end, or it may have been the remains of a chamber placed much as certain chambers were placed in the chamber-end barrow at Uley, already referred to as described by Dr. Thurnam. But it is also just possible that it may have been simply a stretch of walling erected as a

"block" to shore up the loose rubble, of which the great bulk of the tumulus was made. Similar structures, it should be said, have been used for sepulchres in Scottish tumuli; and if we were to remove the upright flagging from the chamber to be hereafter described (see Pl. v. fig. 3) as found in the third long barrow examined by us at Swell, that chamber would come to be very like the woodcut here annexed. But it is unprofitable to speculate further upon the real meaning of this lost structure. We tread on much surer ground in dealing with the locality in which the eight more or less perfect skeletons were found. The way in which the skeletons, three in number, were found, in 1867, to be arranged within the chamber, itself a space which was reported to me as being but 3 feet square, and which was in all probability of even less size, was described to me with much precision as follows:—There were in the middle the bones of a child; all round the north side of the cist were coiled the bones of one of the two adults, with the vertebræ *in situ*, and the legs protruding through a hole in the cist to the outside of it; whilst in the south-east angle of the cist was the other adult, "sitting up," or, as it was otherwise expressed to me upon another occasion, "squatting," with the head resting on the ribs. The covering stones, the existence of which was not noted, as also some of the side stones, must have got displaced, and the chamber had got filled with rubble.

From the chamber there came also to me, in 1867, the jaws of a very young pig, those of a cub-fox, and a part of the occipital bone of a sheep. Some other bones, of ox and of sheep, were sent with them, and may have their presence referred to the practice of feasting at graves. Bones of oxen and sheep were found in various parts of the barrow to the westward of the transverse ossiferous zone; and some of these bones, from being crumbly in consistence, and, like the human bones from the chamber and its neighbourhood, much stained with the manganic oxide, may be supposed to be of the same age. No other human bones besides those already specified were found in the barrow. Large quantities of ashes and charcoal were found here and there, both at the east and west end of the barrow. The structure, indeed, of the eastward end of the barrow, removed in 1867-1868, was reported to us as having been quite different from that of the west, and this mainly by virtue of a line of deposit of ashes along and on both sides of its centre line. This deposit was said to have consisted of heaps of ashes lying on stones, with stones again laid over them. The heaps of ashes were not in a continuous line, but were, as reported, separated by intervals of 10 feet or so. The ashes themselves were reported as being of a "pinkish, fleshy colour,

not at all like the ashes from turf-burning, and as having no grit in them, as field ashes usually have, but feeling soft and greasy when taken between the thumb and finger." Blacker ashes were also found to the north of the central deposit; and in a deposit from 8 to 10 feet to the north of the central axis were found two serrated flint flakes, stones reddened and calcined, and a splinter of glass. The presence of such an article as this last shows that the eastward end of the barrow must have been subjected to some comparatively recent disturbance—at all events, of a kind which would favour the descent of a fragment of such a modern substance as glass. As far as I could judge from excavations made in 1874, the structure of the barrow was, with the exception of the ossiferous zone, and disregarding accidental disturbances made possibly at very different times, essentially one and the same from one end to the other; the mass of the barrow consisting of slates and rubble arranged in a slant from north and south outer walls respectively, so as to meet in the middle line—as one of the labourers, employed in 1868 in carting them away, expressed it, "like the roof of a house." The slanting stones were supported externally by the boundary walls, similar walling being intercalated here and there internally for the same purpose. The converging slopes of flags and rubble had been broken into here and there in the westward half of the barrow; and in exploring one such interruption of its continuity, about 20 feet to the westward of the skeleton-containing chamber, I came upon a few bones of ox, of ancient date, mixed up with a good deal of blackish earth, amongst the rubble. Mr. Royce found a considerable number of such interruptions of the line of the barrow in its westward half, ashes, and bones of lower animals, being found in them. Some of these interruptions of, or alterations in, the arrangement of the component elements of the barrow, may have been coeval with it; those at the east end may have been later—I am inclined to think very much later—than that period. In this matter Mr. Royce does not agree with me.

There was found in this barrow a considerable quantity of pottery, some of a coarse blackish kind, resembling that obtained by me in considerable quantity from a Long Barrow at Market Weighton, and like that, also, in having been intended for domestic uses; and some of the same black and red paste, but cigar-shaped, and intended, as Sir H. Dryden pointed out to me, for use in pot-making, as in Brittany. The pottery was reported to have come from parts west of the middle of the long axis of the barrow, nearer its north than its south wall, and from no very great distance downwards in it. A coin of

Constantine was found in the same locality, but very near the surface.

It may now be well to put distinctly on record what we personally observed in 1874, whilst making certain sections to clear up points left undecided by what had been done in 1867 and 1868.

In clearing out the space already spoken of as the transverse zone, containing the ossiferous chamber, and that part of it which ran southwards from the chamber, parts or the wholes of four skeletons were come upon. And the first points, perhaps, to be noted about them are that they were not laid upon the natural soil, as has sometimes been observed to be the case—as, for example, in another Long Barrow in this neighbourhood—but that they always had some slaty rubble interposed between them and it, and that two of these bodies lay to the south of the long axis of the barrow. These facts may seem to some to be an argument in favour of Professor Nillson's view * of the bodies having been introduced at successive periods into such tumuli, and of explaining thus those marks of disturbance which have induced other writers to have recourse to the hypothesis that these ancient, like certain modern savages, used their tumuli as ossuaries. The first body found was that of an aged woman, lying (on the right side?) in the contracted position, with the vertebræ *in situ*, about 4 feet 6 inches from the top of the barrow, and from 2 inches to 4 inches from the natural surface of the ground, which was separated from the skeleton by a layer of stones. In front of the legs of the woman, and quite close to them, was the skeleton of a child, in possession of the full milk dentition. Charcoal lay in small quantities all about the bones of the two human subjects, and mixed up with them were the bones of voles. As the trench was carried up towards the chamber, the bones of another child, considerably younger than the former one, were found scattered about in it; and, finally, in the nearer neighbourhood of the chamber was found a considerable part of a headless male skeleton lying on its right side—as there are indications to prove, from the wear of the bones, irrespective of notes taken or not taken at the time, that nearly all the skeletons from this chamber, and its neighbourhood, were laid. The head of this skeleton, if it was not buried in the headless condition in which we found it, must have lain or been propped against the eastward wall of the zone or trench. The very cramped position which it would thus have occupied may seem to favour the notion of its having been thus headless when first deposited, a notion which the discovery

* "Primitive Inhabitants of Scandinavia," ed. Lubbock, p. 168.

of heads buried separately in other barrows * might, in the absence of other considerations, serve to confirm. The patella, tibia, and fibula were *in situ*, as well as the clavicle, first rib, and the upper end of the humerus of the right side, and some of the dorsal vertebræ; but much breakage had taken place, and parts of a fibula and tibia of the left side found in relation with these bones by us in 1874, were found to be parts of bones taken up by Mr. Royce in 1867, and given by him to me, showing that much disturbance had taken place then, and render it unsafe to suppose that any of the dislocations of the trunk bones, or, indeed, the separation of the head, may have dated from the time when the body was first put into the barrow. With what was actually seen by us in 1874 must be coupled what was reported to us from 1867, and this went to the effect that two headless bodies were found in this transverse strip of the barrow, west of the central walling, and that one of these lay about the centre of the barrow, and the other further to the south-west; whilst all the skulls, five in number, discovered in 1867 were in, or in the immediate neighbourhood of, the cist. The cist or chamber itself contained three bodies in 1867 undisturbed—at least to any recognisable extent. The fact that some of the entire number of eight bodies were found at a considerable distance from the skeleton-containing chamber, and that they were found without any of the upright flagging with which those of the other skeletons were placed; and the fact that two skulls, which may be supposed to have belonged to the two headless skeletons, were found placed close to the chamber, one on its north, the other on its south side, seem, when taken together, to indicate that the three skeletons in the chamber were interred at one time, but that time one subsequent to that at which the bodies found headless were interred, and that the skulls of these latter were removed at that time from their natural connections, and placed near the chamber. It is, however, plain that such an explanation as this combines the ossuary theory, which it would employ for the skeletons found undisturbed, with the view of holding that these interments are to be considered the successive interments of a family powerful enough to command the use of a barrow, which view it would employ for the skeletons found at a distance from the chamber. It is possible that it may be right so to combine these views.

Osteology and Craniography.—A few general remarks may be made as to the entire collection of human bones obtained from the long barrow, "Swell i.," before we proceed to give in detail the craniography of the skulls which have admitted of recon-

* See Prof. Unger, "Götting. Anth. Verein," i., 1874, pp. 32—33.

struction. We have definite proof of the presence of eight skeletons in this barrow; of these eight skeletons, three belonged to children, and five to adults. Of the five adults, four had been aged; of the four, two had been men, two women. The fifth adult had been a man of from 24 to 30 years of age. Of the three children, one was about 2 years old; the other two were about 7 months at most. The four skulls which belonged to aged adults have been reconstructed. The skulls of the two adult females will be observed to differ greatly in size, the one being very large, the other very small; whilst the two adult female skeletons resemble each other in a point eminently characteristic of savage life—to wit, in showing that their owners were disproportionately short in stature, as compared with the male members of their tribe. The leg bones of the females give them a stature of 4 feet 10 inches and 4 feet 9 inches, against a stature of 5 feet 6 inches in the males; and a similar tale is told even more emphatically by a comparison of their respective collar-bones. The average difference between the male and female stature * of civilised races is about half this amount.

In two cases of the aged adults considerable loss of teeth had occurred before death; in the two others, precisely the reverse was the case. The young man, as might be expected, had retained his entire complement of teeth—in the upper jaw, at least, which alone we recovered in his case. The male lower jaws have the alveolar portion of the mentum relatively larger than in modern races of Europe; and in two lower jaws, one belonging to a male, the other to a female adult, the mental foramen is placed further back than is usual in European jaws. The tibia of four, if not of all the five adult skeletons procured from this barrow, are more or less what Professor Busk † has called "anteriorly platycnemic." Though the femora from this barrow were not markedly carinate—which, indeed, we should not have expected to find them to be, as correlated with this variety of platycnemic tibiæ, all the bones had their muscular ridges well pronounced and defined, as though their owners, if not of very great stature,‡ nor, as is probable, of the very poorest grade amongst a savage tribe (all of whom, however, are always poor), were yet in the habit, whether from choice or necessity, of using considerable muscular force.

* See "Archæologia," xlii. p. 447.

† See "Journal Eth. Soc.," London, Jan. 1871, p. 459.

‡ For the large size of the chiefs in savage tribes, see Whitmore, "Contemp. Rev.," 1873, p. 392; Brenchley, "Cruise of the Curaçoa," p. 137; Erskine's "West Pacific," pp. 155 and 240; Forster's "Observations," p. 229; Ellis's "Polynesian Researches," ii. 26.

Several of the humeri, for example, had the deltoid ridge very strikingly developed, as though their owners had laboured at lifting the stones of the barrow which was one day to cover them. One of the humeri, it may here be noted, and that, as M. Broca has noted* to be usually the case, a female's, had an olecranic perforation. Two scapulæ, with unanchylosed acromial processes, were observed here, a fact of small consequence by itself, but pointing, when taken in connection with others, to the probability of blood relationship having existed between the several occupants of the tumulus.

In their texture, colour, and manganese discoloration, all these bones resemble each other pretty closely, and convey to the mind a strong impression of their antiquity.

Craniography.—Swell i. (a).—Skull of woman, past middle period of life. To this skull probably belong an upper and a lower jaw, and a femur, labelled accordingly, and giving a stature of 4 feet 9 inches; as also a couple of very small clavicles, and a very slender radius.

Ext. length, in inches	7·65	Ceph. ind. (approx.), but the skull is broader as restored than it was in nature	78
Ext. breadth (approx.)	6·0		
Ext. height (approx.)	6		
Circumference . . .	22	Interangular lower jaw	3·8
Least frontal diameter	3·9	Ant. post. index†	.90:195
Greatest frontal . .	5·1	Basilar angle (approx.)‡	10

This, though a very large calvaria, must nevertheless be a woman's, not only for the intrinsic reasons of the verticality of its forehead, the comparative verticality of its parieto-occipital region, the general smoothness and roundness of all its outlines, and the small size of its supra-orbital and mastoid ridges, but also for the extrinsic reason that from the cist and its neighbourhood evidence of four other adult bodies is before us, one of these being a woman's skeleton nearly entire, the other three being undoubtedly male skulls, accompanied, however, by a second set of adult female bones, which can only be referred to this skull.

The first thing to be remarked, perhaps, is the enormous difference of size of the two female skulls, and the consequent unsafeness of saying that men and women are or are not of

* "Mémoires," ii. p. 366, 1874.

† By "antero-posterior index" is meant the relation held to the extreme length by that part of it which lies anteriorly to a line drawn as a tangent to the anterior border of the auditory foramen, and cutting the line of extreme length at right angles. It is easily taken by fitting an indicator to M. Broca's "cadre à maxima." It shows the degree of frontal development, and, *per contra*, of occipital dolichocephaly.

‡ Taken with M. Broca's Goniomètre occipital. See "Rev. d. Anthropologie," ii. 2, p. 202, 1873.

much the same size in savage races. There is some indication of a post-coronal furrow in this skull, to which some internal thickening corresponds, as is usual. This skull would be spoken of as belonging to the Sion types, just as skull (*c*) would be referred to the Hohberg type of His and Rütimeyer.

The lower jaw, which with much probability can be referred to this skull, is feeble, riding up from the level of the mental foramen forwards, which foramen, however, is further forward, being in the plane of the first premolar, than in some other lower jaws of this series. The teeth are much and horizontally worn; the wisdom teeth were never evolved, in correspondence with which fact the smallness and absence of wear of the wisdom teeth, in an upper jaw probably belonging to this skull, are to be noted. The ramus forms an oblique angle with the body of the bone.

Swell i. (b).—Skull of a man past the middle period of life. The cranial bones are thick, and the pits for the Pacchionian bodies well developed. To it probably belongs an old upper jaw. The lower jaw, probably belonging to it, indicates age by the wear of its teeth and the loss of all its molars, except one on each side. The jaw is somewhat atrophied in consequence of this, and the ramus lies obliquely to the body of the bone.

Ext. length in inches	7·6	Occipital arc . . .	5·0
Ext. breadth . . .	5·4	Entire arc	16·8
Vert. height . . .	5·8	Ceph. index (approx.)	70
Absol. height . . .	5·7	Basilar angle . . .	30
Frontal arc . . .	5·2	Ant. post. index .	110 : 192
Parietal arc . . .	5·6	Basi-cranial axis . .	4

The high basilar angle of this skull shows that if it had retained its maxillary bones and teeth it would, in all probability, have rested upon its occipital condyles and teeth when placed on a flat surface. Having a high figure for its vertical arc, coupled with the ordinary length of basi-cranial axis, its cranial vault has been rotated forward so as to throw the bregma far (viz. $\frac{8}{10}$ths of an inch) in front of a line drawn from the auditory foramen upwards at right angles to a horizontal line. The highest point in the vertical contour is 2·1 posterior to the coronal suture, and from this highest point the parietals slope over, so as to form an equable incline with the superior occipital squama. There is a very large occipital spine which hinders the exterior surface of the skull from showing any great difference between the glabello-postremal and the glabello-inial diameters. The conceptaculum cerebelli, though sloping upwards, is yet far from approaching the vertical line as nearly as in typical brachycephalic skulls. The forehead slopes gently from the line of

the largely-developed supraciliary ridges to that of the frontal eminences, after which it passes, with greater obliquity, into the upwardly-inclined plane of the anterior halves of the parietals. The frontal is markedly carinate, its mesial elevation passing continuously onwards into the still better marked parietal ridge, on either side of which a post-coronal depression is visible exteriorly, corresponding with an inwardly-looking convexity of the inner skull table. It presents a well-marked pentagonal outline when viewed in the occipital norma, the parietal tuberosity being nearly as well marked as the mesial vertical carina.

Swell i. (c).—Netherswell, Dec. 1867.—Strong man, past middle period of life. To this cranium may probably be assigned the femur, measuring 18·4 in., as also the bones found *in situ*, September 22nd, 1874, but without a head. The other two male skulls are either too old or too young to have these bones assigned to them; the stature of this man would, therefore, have been 5 feet 6 inches.

Glabello-inial length	7·9	Parietal	5·1
Ext. length	8·2	Occipital	5·2
Ext. breadth	5·3	Ceph. index	64
Vert. height	5·7	Ant. post. index	115:210
Least frontal	4·1	Circumference(approx.)	22·3
Frontal arc	5·2	Basilar angle (approx.)	32

Typically dolichocephalic skull—Orthognathous.—Large supraciliary ridges, from which forehead slopes only slightly. The highest part of vertical contour is at coronal, when the head is held with the vertical line joining coronal suture and auditory meatus. The parietals slope very gradually to the occipital squama, which possesses a considerable length, looking vertically. In the norma lateralis nearly the whole of the parieto-occipital suture of that side comes into view. In the vertical view this skull is typically elongato-oval; there is some slight constriction immediately behind the region of the coronal suture; the broadest part of the skull is below and a little in front of the parietal tubera. The skull walls are compressed from side to side below the level of those eminences, and taper rapidly to the occipital squama. The sagittal suture is partially obliterated. Viewed from behind, the roof of the skull falls rapidly from the middle line to the region of the parietal tubera, and its walls converge again in the region of the squamosal. The orbital and supraciliary ridges occupy a plane anterior to that occupied by the commencement of the brain-case. The mastoids and temporal ridges are well developed.

The palate is narrow, deep, elliptical; the teeth much worn,

in a slanting, not a horizontal direction. To this skull may, with much probability, be assigned a lower jaw, with teeth similarly worn. Its angle is well defined and flanged outwards, and the body of the bone is emarginated anteriorly to it. The mental prominence is well marked, and, though narrow, is divided into two processes, one on either side. The alveolar part of the front of the jaw is deep. The mental foramen is further back than is usual in European skulls, being in the plane of the second premolar.

Swell i. (d).—Part of frontal, and right molar and maxillaries of a strong young man, æt. 20 to 24. The frontal appears to have been vertical up to the tubera, which are low down, and then to have sloped very gradually to the coronal suture. The temporal ridges are greatly developed.

Orbit width	1·65
Orbit height	1·3

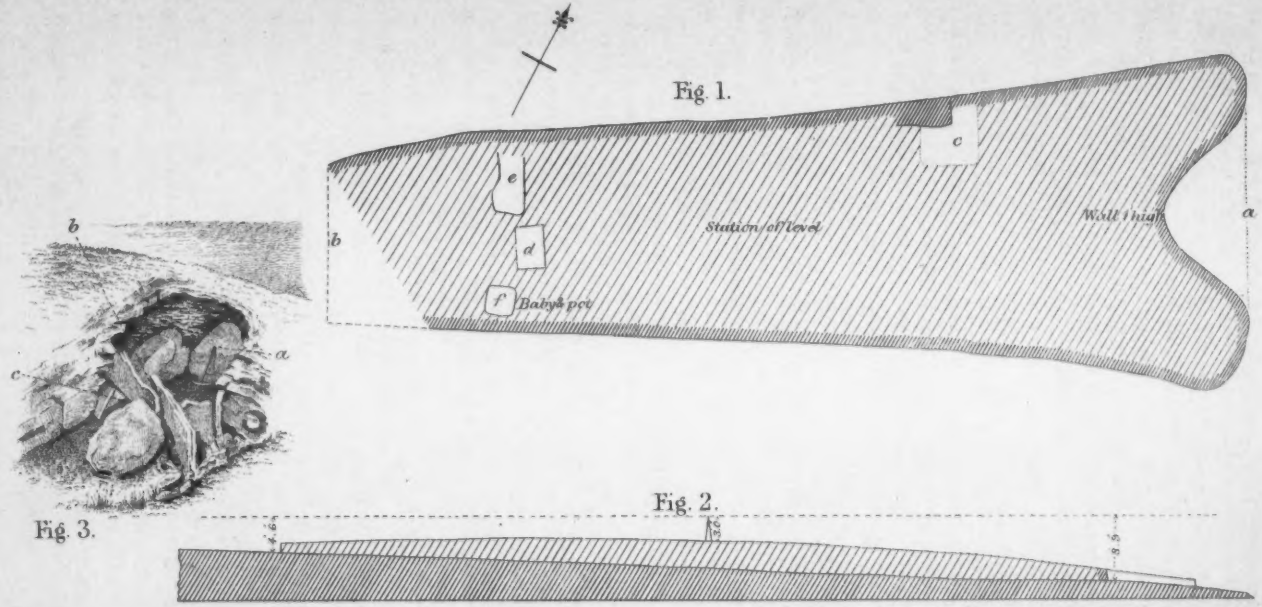
The wisdom teeth are in place, but have been very little used. The supraciliary ridges are large, but are not underlaid by sinuses.

Swell i., 22, 9, 1874.—Imperfect calvaria of old woman, 4 ft. 10 in. in stature, dolichocephalic both by contour and by measurement. It contrasts very markedly, as regards size, with the other female skull procured from this barrow, into the inside of which it could be put, though its owner was an inch taller (4 ft. 10 in. as against 4 ft. 9 in.) than the owner of skull in *Swell i.* (a). This skull might be taken as a fair specimen of the River Bed type of Professor Huxley, the larger as a fair specimen of the Sion type of His and Rütimeyer.

Ext. length	7·1	Occipital	4·2
Ext. breadth (approx.)	5·0	Cephalic index . . .	70
Vert. height . . .	5·3	Femur	16
Frontal arc	4·9	Ulna	9·2
Parietal	5·4	Stature . . .	4 ft. 10 in.

The forehead is vertical; the highest point in the vertical contour lies about an inch posteriorly to the coronal suture; the posterior half of the parietal curves evenly into the slopes of the superior occipital squama. The cerebellum was much overlapped by the posterior cerebral lobes. The lower jaw is feeble. The mental foramen corresponds to the interval between the second bicuspid and first molar. The teeth are very much worn down, and there are two or three alveolar abscess-cavities in the jaw. One very large one occupies a great part of the molar region of the left upper maxilla.

Many of the vertebræ, from the cervical downwards, are



C.F. Kell, Lith. London, E.C.

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FIGS. 1 & 2. GROUND PLAN AND LONGITUDINAL SECTION OF LONG BARROW, "SWELL VI."

FIG. 3. CHAMBER AND GALLERY FROM LONG BARROW, "SWELL VII."

beset with exostoses, but they are not anchylosed. The tibiæ were not sufficiently well preserved for me to decide whether they were platycnemic, as were all the other four adult tibiæ. The femur is very much flattened in the region of the insertion of the glutæus maximus, but there is no flanging out beyond the plane of that insertion. This flattening is not rare in ancient skeletons with skulls of very various kinds. It has been noted by Holder* as existing in his "Ligurian" type. Only a few of the bones of this skeleton have become stained with manganese.

Swell vi.—Long Barrow in field known as "Long Ground," two miles west of Netherswell, Eyford, co. Gloucester (Plate v. figs. 1 & 2.)—In the field next beyond the one lying on the left side of the road leading from Netherswell to Naunton, at the bottom of the first descent, and about two miles from the former place, we, that is to say, the Rev. David Royce, Canon Greenwell, and myself, examined, in September, 1874, a Long Barrow of very similar form to the horned tumuli described by the late Dr. Thurnam† and by Dr. Joseph Anderson, from parts of Great Britain as far apart from each other as Gloucestershire and Caithness respectively. A plan (Pl. v. fig. 1) taken by Sir H. Dryden, Bart., who visited the spot, and gave us the advantage of his experience, will enable anyone who wishes it to take the measurements of this barrow in detail. It is sufficient here to give the following particulars:—The broader end of the barrow was at E.N.E., and here the outlines of the two horns‡ were distinctly traceable; the westward end of the barrow had suffered more from agricultural operations than the eastward. The distance, however, from this end, as restored, to the centre point of the eastward end, was 108 feet. The distance between the tips of the two horns was 44 feet; the barrow tapered gradually from this, its extreme width, to a width of 24 feet at its westward end. The height of the tumulus was about 4 feet, on an average, but allowance must be made for possible diminution by farming processes. The two horns were not symmetrical, the north-eastern being the longer and slenderer. The limiting wall was made of the slate of the district, being Stonesfield oolite, arranged in about fourteen horizontal rows, and forming a boundary about 2 feet wide and 1 foot 9 inches high. The body of the barrow was formed of stones, with a general inclination inwards towards the middle line from either side; and in the middle line, here and there, a blackish seam was to be seen, due, I think, to accidental detritus of

FIG. 3. CHAMBER AND

* "Arch. f. Anthropologie," ii. p. 54. † See above.

‡ The Gloucestershire tumuli appear to differ from the Scottish, in having only two horns, and those at the eastward end.

vegetable and other rubbish, during disturbances, in past time, of the barrow.

This barrow contained four more or less disturbed "chambers," or "cists," the position of which will be seen by reference to the ground plan. In the case of the first of these receptacles of the dead, which was the one which had suffered most in the way of disturbance, there can be no doubt that the term "chamber" is the right one to apply to it, as the limitary wall of the barrow formed a passage leading down to it; but in the case of the other three, this passage was not found to exist, and though the end stones, which give a "cist" its distinctive character—that, namely, of being closed on all sides—were not found *in situ*, it is easy to understand how they may have been the first to be moved, when the plough was first driven across the barrow, at right angles to the long axis of which they stood.

The "chamber" having been most completely ruined, we can with certainty depose to the presence of no more than two bodies as having been found, represented by fragments in its immediate neighbourhood, and as having, consequently, with some likelihood, been once contained in its interior when intact. One of these had been an adult, one a child, with the milk dentition only in place. The bones of the adult were discoloured with manganic oxide, as were those of an ox and horse found with them; those of the child were not.

Of the three other receptacles, "cists," or "chambers," for the dead, the first examined contained portions of the bodies of two adults and four children, together with the larger part of the skeleton of a young dog, and some other domestic animals' bones. The second contained portions of ten skeletons, all of which, with one exception—the skeleton of a boy or girl—had belonged to adults, whilst the fourth contained only one skeleton, that of a person between twelve and sixteen, with whom a fragment of coarse domestic pottery was found.

September 25, Friday.—The first operation in the way of examining this barrow took the shape of cutting a trench across its eastward end, at right angles to its long axis, at a level which subsequent examination showed to be about 8 feet to the westward of the central concavity of the horned eastward end.

At about 17 or 18 feet westwards from the centre point of the eastward end were found some bones of a child, with the milk dentition in place, about 2 feet or half-way down in the barrow. Parts, also, of an ulna, of a tibia, of the phalanges, and of both temporals of an adult, were found at about the same distance from the east end, and at a point a little south by west of the middle line. In the middle line of the barrow at this distance from the east end was a blackish seam of about 6 feet

6 inches in width, containing bones, but limited in the eastward direction by masses of stones, under which also were found a few fragments of human bones, adult and young. Amongst the bones from this part of the barrow was one fragment of burnt bone, possibly human, as well as some teeth of ox and horse. These teeth, as also the human temporals, were stained by the manganic oxide. These appearances were difficult of interpretation until we came upon the ruins of a "chamber," about 6 feet or so further to the north-west, the destruction of which, and the scattering the contents of which, may explain the blackening of the central strip of the barrow observed here, as also the presence of the human bones. The single burnt bone, whether human or not, may have been an accidental importation. Some adult teeth of *Bos*, from the south side the barrow, found together, are beautifully coloured by the manganic oxide.

September 26, Saturday.— A piece of the parietal of a human subject, beyond the period of childhood at least, a considerable development of diploë having taken place in it, was found at the bottom, to the south of the middle line, under the slaty, slantingly-arranged rubble, not under the central deposit, at a point about 27 feet from the centre point of the eastward end. On a level with it, as regards the long axis of the barrow, but close to its northern wall, we came upon a stone, 4 feet 9 inches long, 3 feet 2 inches high, placed on its edge, and sunk some way into the natural soil. It had its long axis at right angles to that of the barrow, the wall of which, as afterwards discovered, formed a passage, 4 feet 2 inches wide, leading down to it. Another large stone, 2 feet 10 inches long, 3 feet 3 inches high, also standing on its edge, abutted on the inner end of the first stone, and projected in a south-westerly direction into the barrow; and two other large stones were lying flat near the upright ones. There can be little or no doubt that these stones represent what was once a chamber, such as that found in the Long Barrow, Swell i.

On this day some few bones of mammals and birds were found in the barrow, west of the line of the cist, and some way above the level of the natural ground. The mammalian bones belonged to ox, sheep, pig, dog, vole, and rabbit: the larger bones amongst them appeared to be ancient; whilst the smaller, like the bird-bones, some of which belonged to a goose, and some to a fowl, and some to a bird smaller than a pigeon, may have been comparatively recently introduced into the barrow. None were stained with manganese.

September 28, Monday.—A fragment of a tobacco-pipe was found low down, in fact, on the natural soil. On this day the Rev. David Royce came upon the boundary-wall, which had

two prolongations inwards, to meet the chamber represented by the large stones mentioned above, and formed thus a passage 4 feet 2 inches wide. The remainder of the day was employed in tracing out the two horns of the east end of the barrow.

September 29, Tuesday.—At a distance of 46 feet from the apex of the re-entering angle, in the centre of the east end, we found the skeleton of a child of about 5 or 6 years of age lying just outside the boundary-wall, on the south side of the barrow. The child had been buried in the contracted position, and had been laid upon the right side, with one hand at its face and the other upon its hip. The teeth have the same purplish blackening, due to manganese, upon them, which has been so often observed in these long barrow bones from chambers.

On this day we came upon what I believe may have been the ruins of a "cist," *i.e.* of a closed grave, walled in with slabs, and without any passage leading to the exterior such as has been noted in the other barrows, and also in this, and as would have justified us in speaking of it as a "chamber." It was 80 feet from the re-entering angle at the eastward end, and being about 5 feet 6 inches by 4 feet, had its long axis at right angles to, and in the middle line of, the barrow. In this cist were found parts of two adult human skeletons, one belonging to a strong man, the other to a woman past the middle period of life; of the skeletons of three children of from 7 or 8 years of age; of one child, of about 2 years of age or less; of a dog's skeleton, lying *in situ*, and close to the bones of the old woman, as also scattered bones of ox and sheep. The bones themselves, closely packed at first, had been much disturbed subsequently, as had also the cist itself. An indication of this was furnished to us by the discovery of the fragments of a drinking-cup only a couple of inches from the surface of the soil over the barrow. This cup was of a not uncommon pattern, thong-made; and with its paste red outside and black inwards, but was somewhat thicker than "drinking-cups" are usually. It had probably been interred with a body of a later period than those buried in the cist, and had come into the position in which we found it in consequence of agricultural or other disturbance of the place. To such other disturbance the following appearances seemed to speak. The bones seemed in a few cases to have been left, partially, at least, *in situ;* but in many cases I found a few bones between a couple of slates, the lower of which, in its turn, overlaid a second set of bones. This would appear to be explicable by supposing that, the roof of the cist being removed, its contents were taken out partially, and then thrown in again, with any rubble which came to hand, so as to fill the cist up again.

It is not safe to say what the precise size of the cist had been originally, but it may have been somewhere about 5 feet by 4 feet. The bones contained in it, when examined by me, were disposed as follows:—The first bones come upon were bones of children, some of which had apparently been left *in situ*, and upon the left side, whilst others had as evidently been disturbed. As there were no less than three children with the first permanent molar in use, but with no more, or with only the first incisor of the second set in addition, and consequently all three between 7 and 8 years of age, in this cist, and the western half of it, and, besides them, a child of 2 years, or something less, it is a little difficult to be quite sure how many of so many similar bones had been placed *in situ*. None of all the bones lay upon the natural ground, but all had a flagstone interposed between them and it. On the south side, and, I think, at the south-west angle, part of the lower jaw of a strong adult and the atlas were found near each other. Further east, under one large flagstone, were lying the patella of a strong adult male and some bones of a skull of a child. Of course, these bones must have been disturbed to get thus into company with each other, and with no other bones between two flagstones. In the middle of the cist were found some of the bones of a youngish dog, and amongst them its lower jaw, which show it to have been about the size of an English mastiff; and in the same situation were bones of ox, of sheep, and of several human subjects, young and old. But the most striking "find" in the cist was in the north-east corner. There, between two large stones, were found, lying *in situ*, the femora, humeri, ulnæ, radii, clavicles, pelvis, ribs, and many vertebræ of a woman past the middle period of life. She had been laid on her left side; and between her chest and the north wall of the cist lay the pelvis and leg bones of a young dog, which we may, with some probability—bearing in our recollection the interesting account by an eye-witness, Ahmed Ibn-Fozlau, of the incremation of a Norse chief, translated for us by Ḥolmboe and Anderson*—suppose to have been put into the grave to keep his aged mistress company, there and elsewhere. The woman had been laid so that her skull just projected beyond the slab upon which the upper trunk bones were laid; and the skull had just escaped from being smashed, when the top stone fell in, at the cost of being carried off, probably by some mediæval or later tomb-riflers, and so lost to us. Half the lower jaw was still *in situ*, and has been recovered.

Swell vi., Cist 1.—Under this slab, together with the dog and

* "Proc. Soc. Ant. Scot.," May 13, 1872. Compare Nillson, "Primit. Scandin.," ed. Lubbock, pp. 140, 150; "Frilford Graves," p. 9; "Archæologia," xlii.

man, were the thigh bones of one of the children, and also femur of sheep. The lower jaw of the old woman was feeblish, as compared with some of the male jaws, but not with all, from these barrows. It had lost no teeth from the half we recovered, during life, though the teeth were very much worn down, and the first molar, notably, down to its fangs; in connection with both of which there were alveolar abscesses.

The femur, 16 inches long, of the woman, laid in company with the young dog, gives a stature of 4 feet 10 inches. It is considerably flattened from before backwards, in the region of the insertion of the glutæus maximus, but the insertion of this muscle is at the free edge of the bone. The whole bone, and others with it, under the label, "*Cist in situ*, Swell vi.," gives the idea of their owner having had hard work and poor food, being, as they are, slight, but with rough ridges. The other adult bones may have belonged, and probably did belong, to a man beyond the middle period of life, of moderate strength; many of the bones are exostotic, as would be expected in the bones of people of such early times, living in a bleak upland country, such as the neighbourhood of Swell.

From the contents of this cist a child's skull has been reconstructed by Mr. Wm. Hine. Æt. circa 7 or 8.

Ext. length . . .	6·5	Least frontal . . .	3·4
Ext. breadth . . .	5·1	Lowest frontal . .	4·5
Vert. height . . .	5·3	Ceph. ind.	78

This is a high cephalic index, but its height is explained by the skulls having been reconstructed in the interests of brachycephalism, a direction the reverse of what is usual in reconstructed or shrunken skulls; and that this is so, is demonstrable from the fact, that one of the temporals will not fit in between the parietal and frontals.

The interior of the frontals in this skull are richly, and the interior of the parietals more sparingly, covered with vascular osseous upgrowths, just as (skull E, May, 1864, Long Wittenham, Univ. Museum) in many skulls in which the widening of the lower jaw, and with it the easing outwards of the lateral walls of the skull, begins to put an end to the constant pressure which the brain previously kept up upon the skull's interior surface.

Some of the bones from this cist are encrusted with stalagmite, notably those of the old woman, but none of them have any manganic discolouration. One of the humeri of the old woman, the right one, has an olecranic perforation, this peculiarity being in the bones from these barrows, as in some other cases*

* See Broca, Mem. ii. p. 366.

observed in the female more frequently than in the male bones. Many of the bones are beset with exostoses, as in the bones from Swell i.

September 30, Wednesday.—On this day a third receptacle, "cist," or "chamber," was found to the north of the one just described; it was 4 feet 6 inches wide at its widest part, 3 feet at its narrower, which occupied three-eighths of its entire length of 8 feet, so that it had somewhat of the shape of a bottle. Its long axis, as was the case in both the other similar receptacles, ran at right angles to that of the barrow; its narrower end was within a couple of feet of the north wall of the barrow; its south-east angle was 82 feet from the re-entering angle of the east end. Within this "cist" or "chamber" were found parts of no less than ten skeletons, of which Canon Greenwell, who superintended the examination of it in my enforced absence, speaks as follows: "It was very difficult to say whether any body was entirely undisturbed, though some had some of the bones in their relative positions. The six bodies" (found on the first day) "were huddled into so small a space, and the bones were so much broken, that it was impossible to make out the relative position of the bones of the several bodies. I think, however, that some, if not all of the bodies had been placed in the cist in the flesh, or, at all events, when the ligaments were there. . . . . All the skulls seem to be at the south side of the cist. . . . . These cists are very puzzling. . . . . I do not think they have been tampered with in late times, and the whole appearance suggests an ossuary."

On October 2 (Friday), Canon Greenwell wrote that the "cist has had ten bodies in it, and some certainly in position, if all were not. I incline to the ossuary theory more and more." Details as to the osteology of this rich "find" will be found further on.

Another "cist" or "chamber" was discovered on the same day as this, making up the entire number of receptacles for skeletons, "chambers," or "cists," to four. In it were found the bones of but a single individual, a young person between the age of twelve and sixteen, the upper epiphysis of the ulna being unanchylosed, whilst all the permanent, except the wisdom teeth, were in use, and an urn of black, coarse ware of quite different character from the one already spoken of as found placed superficially to the second "cist." This cist was about 4 feet square; it was close upon the southern wall of the barrow, and about 85 feet from the re-entering angle of its eastern end. The fact of this cist having but a single occupant, and this occupant being a young person, and being accompanied, which was not the case with any other skeleton found in these long

barrows, by a food-vessel, are not unimportant. In this barrow, as in the two other long barrows examined by us in this locality, and also in the cases of certain other Gloucestershire long barrows, and in the case of the long Scottish cairn, Camster, in Caithness, no burial had taken place at the east end.

Osteology.—(Swell vi., C 2).—From the "chamber" or "cist" No. 2, examined by Canon Greenwell, and labelled *Swell vi. C* 2, we have evidence, through the lower jaws recovered by him, of no less than ten bodies having been interred in it. Of these bodies only one had belonged to a person below the age of puberty, this one having belonged to a boy or girl of eleven to twelve years of age; six had belonged to persons past the middle period of life, one to a young man with the wisdom tooth just coming into use, a ninth to a man in whom that tooth had come into use, but had had only little wear, and a tenth to a woman in the same condition of dentition. Three of the ten appear to have been women, two of whom were aged, and one probably about thirty years of age; four appear to have been strong men, past middle life, but the sex in one case is doubtful; one of them had been a strong man of about thirty. The lower jaw of the sixth male subject, in which the wisdom teeth are just rising into use, does not enable one to predicate much as to his strength beyond what is implied in assigning it to the male sex. All the lower jaws except three lie evenly from angle to mentum, when laid on a horizontal surface; only one has the foramen mentale further back than it is found to be in modern European specimens. The alveolar portion of the mental region has not the same relative development as is observable in several of the lower jaws from the other long barrows of this district, and this and some other osteological considerations, approximating these skeletons to later, rather than earlier, Celtic types, when coupled with the fact that these bones are much less stained with manganese, and that the grave containing them was most probably not connected by a gallery or passage with the exterior, as is usual in long barrows, incline me to think that this collection of bones may be of less antiquity than the others. In none of these lower jaws had any teeth been lost before death; in only one is there any caries visible, and in one other there is a cavity formed by an alveolar abscess in connection with a lower front molar worn down to the fangs, and with its pulp-cavities almost entirely obliterated by osteo-dentine.

A considerable number of anteriorly platycnemic tibiæ have been removed from this cist; one femur, length 18·2 inches, giving a stature of 5 feet 6 inches, came with such a tibia, length 13·3 inches. It is somewhat flattened superiorly, but is not

carinate, though in all probability it belonged to a male subject. One tibia, not platycnemic, has been recovered from this cist; its length is 13·1 inches, giving a stature of 4 feet 9 inches. Three humeri, probably of females, with olecranic perforations, have been recovered from this cist, two of which possibly, though not probably, belonged to the same female subject. Of three other adult female humeri from this cist, one shows the commencing of perforation; the other two have no indication of it. Some of the human bones and some of the brute bones found in this cist or chamber present the manganic discolouration. The male and female bones, when compared, show the female bones, especially the clavicles and humeri, to be disproportionately smaller than the male. Some of the bones are beset with exostoses. The instance of an ossified costal, and another of an ossified ensiform cartilage, belong to this series.

Swell vi. (2, 1).—Skull, with part of lower jaw of a strong man in middle period of life, corresponding with the Hohberg type of His and Rütimeyer. 1 and 2 were close together at south-west corner of cist, with other bones, all disturbed, but still in some order. N.B.—Parts of two bodies, one a frontal of woman.

Ext. length . . .	7·5	Ceph. ind.	72
Ext. breadth . . .	5·3	Glabello-inial length .	7·3
Vert. height (approx.)	5·9	Circumference (approx.)	21

Ant. post. index, 97 out of 190.

There is considerable obliteration of sutures internally. The teeth are much and horizontally worn; some appear to have been lost during life, but no wisdom teeth were developed. The mastoids and supraciliary ridges are large, and the muscular lines for the temporal insertions pronounced. Frontal and parieto-occipital regions describe an even curve. The highest point in the vertical arc is a little posterior to the coronal suture. The sides of the occipital pentagon incline outwards a very little from the region of the parietal tubera, which in this skull are very faintly indicated, as in the Hohberg type of His and Rütimeyer, which it resembles also in its well-marked vertical carination. The mental prominence is not very great, but is markedly triangular when viewed from in front.

Under this label came the frontal and other bones of a woman.

Swell vi. (2, 2).—Skull, with part of lower jaw of woman past middle period of life. This skull was in the south-west corner of the cist, close together with Swell vi., 2, 1. Other bones were together with the skull; some finger-bones

were at the head of 2; and in front of neck a bead of Kimmeridge shale; but the bones were so much intermixed, it was difficult to say with which body it was associated.

Circumference . . .	20·3	Vert. height . . .	5·7
Ext. length . . .	7·2	Ceph. ind.	77
Ext. breadth . . .	5·6	Glabello-inial length .	6·8

Ant. post. index, 98 out of 183.

This skull, though large, and notably possessed of large mastoids, is, nevertheless, all but unquestionably a female skull, as shown by the verticality of its forehead, the absence of large supraciliary ridges, the prominence of its parietal tubera, and the smallness of its teeth.

The highest point in the vertical antero-posterior arc lies a little behind the coronal suture. The parieto-occipital, like the frontal region, has the vertical dip characteristic of the female sex. The difference—four-tenths—between the glabello-postremal and the glabello-inial diameters depends to a considerable extent upon the thickness of the superior occipital squama. Viewed in the vertical aspect, the skull presents a smoothly rounded-off outline, which has its point of maximum width in the meridian of the mastoids, and tapers somewhat rapidly forwards, and more gradually backwards, from that level, 123 parts out of 183 being anterior to it, as in *Swell vii.*, 1, 1. The tubera parietalia are prominent, and the lateral walls converge downwards from them, and, as in female skulls, there is no vertical carination.

This skull has many of the characteristics of the "Sion typus," in contradistinction to those of the Hohberg; but they are referrible, I think, to the difference of sex mostly, *e.g.* the forward position of the point of greatest width, the smoothly rounded outlines, and the absence of a vertical carina.

An upper incisor and a canine are the only teeth lost during life.

Swell vi. (2, 3.)—"Just south of 1 and 2 came another body, 3, with fingers at head, but whether disturbed or not I cannot say" (note of Canon Greenwell). To this may, perhaps, be referred an occipital and part of a parietal, labelled Swell vi., 2, 4. This occipital resembles the one just described, and also that belonging to Swell vi., 2, 5, in its great thickness.

Swell vi. (2, 4).—Immediately east of 1 and 2, another body, 4, on right side, head to E.S.E. At knees of 4, another body, 5.

Portion of calvaria of, probably, woman in or past middle period of life, long, flat, and low, from, probably, very much such a skull as Swell vi., 2, 5; so that it is possible enough

that these two skulls may have belonged to a mother and a daughter. The adult female humeri imperforated.

Under this label came also the bones of a strong male subject, many of which were exostotic.

Swell vi. (2, 5).—This calvaria probably belonged to a woman in the middle period of life. All the bones are of considerable thickness, but the skull does not bear the appearance of old age in other respects. Under it, however, are the bones of a much older and stronger subject (sex ?). To it probably belongs an upper jaw which had lost no teeth during life, though some are much worn, and in which no wisdom teeth have been developed.

Ext. length	7·4	Ceph. index . . .	7·2
Ext. breadth . . .	5·3	Glabello-inial . . .	6·8

There is a furrow developed along the posterior two-fifths of the sagittal suture; and in this respect, as in the more significant one of its elongato-oval vertical contour, and its fairly rounded-out outlines, as also in its relative lowness, so far as can be approximatively made out, this skull resembles the dolichocephalic form so common at Frilford, and in other Romano-British cemeteries. I have seen similar skulls in Dr. Thurnam's collection from Tilshead, West Kennet, and Nympsfield, but they are not common in early British cemeteries.

A bone of a pig came with these bones, as also parts of another and older human subject, distinct from either, under label vi. 2, 4.

At knees of 4, another body, 5, apparently on right side, head to E.S.E., hands to face, only one piece of lower jaw.

Swell vi. (2, 6).—

Ext. length	7·7	Glabello-inial length	7
Ext. breadth (approx.)	5·6	Frontal arc . . .	5·7
Vert. height	6·1	Parietal arc . . .	6·1
Ceph. index (approx.)	74	Occipital arc . . .	4·9

Calvaria with upper and lower jaws of man in middle period of life. The sagittal suture is entirely obliterated internally. The teeth, some of which had been lost during life, though none are carious, are a good deal worn. The mentum is characteristically triangular, but not prominent. The foramen mentale is in the line of interval between præmolar 2 and molar 1. The forehead is vertical up to the level of the frontal eminences; it then passes with an even curve backwards. The highest point of the vertical arc is an inch behind the coronal suture, the posterior halves of the parietals form an equable slope with superior occipital squama. The frontal sinuses are large.

It is a good representative of the Hohberg or Cumbecephalic type of skull.

With this skeleton were the humerus of a mole and a tooth of a fox.

Note by Canon Greenwell.—"Just south of 5, another head, 6, whether disturbed or not cannot say. The whole looks as if bodies had been partly divested of flesh."

Swell vi. (2, 7).—Under this label came two lower jaws, one certainly of a man of some considerable strength, and about 30 years of age; the other may have belonged to either a man or a woman, but in either case to an aged individual. Neither jaw had lost any teeth before death, though there is much horizontal wear of them in the older jaw.

Note by Canon Greenwell.—"Close to the west end of cist, at north side, a skull, 7, on the right side, laid on hip bones and sacrum of another body. There is connection with one femur at least. . . . . The body, 7, must have been on right side. Under 7, and pelvic bones, a very rotten skull, 8."

Swell vi. (2, 8).—Boy or girl of about 11 or 12 years of age.

Swell vi. (2, 9).—Skull of an aged person, probably a female; but under this label there are certainly parts of two bodies—one a strong man's, the other a woman's. The skull and the lower jaw I incline to think a woman's. With the skull came, in one paper, two vertebræ, two of the upper dorsal, with the following note: "These belong to 9, and were placed 1, 2, across the line of the others."

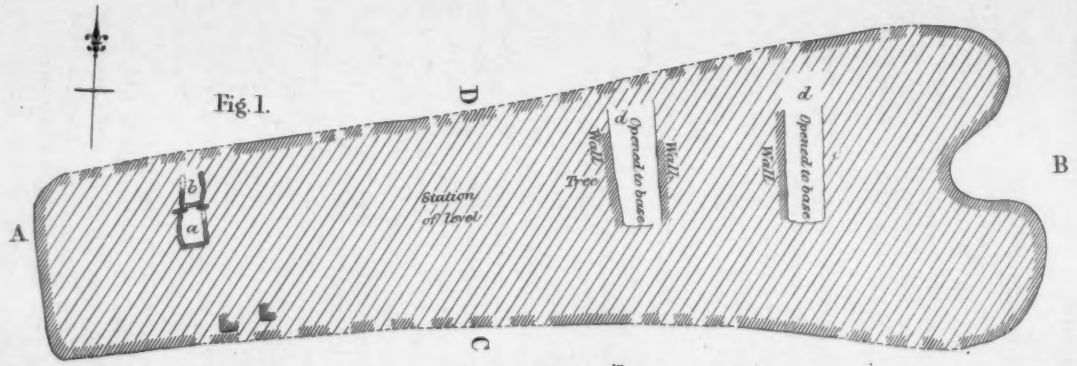
In another, seven of the lower dorsal came also in a paper by themselves. On the paper a note was written to the effect that they had all been found in connection.

The dislocation of backbone of 9 was probably caused by the lower part, which was on a large stone, not having gone down while the upper part settled.

The femur is flattened in region of glut. max., and gives a stature of 5 ft. 6 in. The tibia is flattened; but did these bones belong to the skull?

Ext. length	7·1	Ceph. index (approx.)	75
Extreme breadth . .	5·3	Femur	18·2
Vert. height . . .	5·5	Tibia	13·3

Viewed from above, this skull has an evenly ovate contour, tapering only very gradually either backwards or forwards. The point of maximum width is in the meridian of the mastoids, which are large for a female skull. The forehead is vertical up to the level of the tubera, and the parieto-occipital region is also a little more vertical than is usual in skulls of this elongated type. The parietal tubera are less well marked than is usual in female skulls. The supraciliary ridges, however, are characteristically female, as are also the low height index and



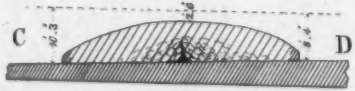


Fig. 3.

Fig. 2.

C. F. Kell, Lith. London, E.C.

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LONG BARROW. "SWELL VII."

the lower jaw, the teeth in which are very much worn, and, though an alveolar abscess was developed under the anterior molar, had not been diminished in number by more than one or two during a very long life.

Note by Canon Greenwell.—"Just north of 7 and 8, a body, 9, on left side, head to south, apparently in position; hips are 7 inches higher than the head. Just north of hips of 9, a skull, 10, close to surface and much disturbed, No. 9 being the highest body, as regards the hips. The fact of its being undisturbed shows that any dislocation or breakage is not due to modern agencies."

Swell vii. (Pl. vi.)—The third long barrow examined at Netherswell in Sept., 1874, is situated on a hill to the N.W. of Netherswell Church, in the district known as Upper Swell, upon the estate of Alfred Sartoris, Esq., by whose kindness Canon Greenwell was allowed to explore it. It is the largest of the three barrows examined here, and resembles the second very closely in its contour, and both that and the first in the materials—oolitic flags and rubble—of which it is made up. Its extreme length is 173 feet. Its length from its westward end to the central concavity of its horns 156 feet; its extreme width, which lay about 20 feet west of the apices of the horns, is 57 feet; its least width, which is, as usual, at the west end, is 32 feet. The height of the mound is from 6 to 8½ feet above the natural surface; it is surrounded by a wall, which was 5 feet high at the east end, where it defined the outlines of the horns, and about 4 feet high round the sides and west end, being in thickness about 1 foot 6 inches. Its west end was quadrangular. Its long axis ran very nearly due east and west, as shown by the ground plan and sections (Pl. vi. figs. 1, 2, & 3), which, like the plan and section of "*Swell vi.*," we owe to Sir H. Dryden, Bart.

The point of special interest in this barrow was the presence in it, at 24 feet from its west end, of a chamber (Pl. v. fig. 3) 7 ft. by 4 in size, which had long ago, though within the memory of man, been rifled, but which still contained, in September, 1874, evidence of having furnished lodgment to no less than nine human bodies. To this chamber a passage led, the limit between chamber and passage being marked by the presence of a sort of doorway, across which a large flagstone crossed, at a distance of 1 foot 3 inches from the ground, and helped to support the roof. The floor of the passage was flagged, whilst that of the chamber was not, and just outside the doorway opening into the "chamber" lay parts of two more or less disturbed skeletons, one of a woman, one of a child, overlaid by an almost or entirely undisturbed male skeleton.

As regards this arrangement of the stones of which the barrow was made up, it is well to state that between the north and south walls the largest stones were found in the middle line, and were thus often placed upright with the more outwardly placed stones sloping towards them, and resting upon them for some distance, and then assuming a more horizontal arrangement. The first three feet from the ground were occupied by larger stones; the upper three of the entire number of six, the average height of the barrow, were occupied by smaller and less regularly placed stones (fig. 3, Pl. vi.). It was here, owing to the size of the barrow, and notably its height, that we observed that the workmen, in removing the stones in the various exploratory incisions, came constantly to arrange the stones which they displaced, in horizontal layers, for the sake of security from downfalls. Thus an appearance just like that of the transverse "walling," often observed in the undisturbed parts of the barrow, was frequently produced, and it is obvious that the two similar arrangements, however different in date, must, in all likelihood, have been due to the same cause, viz. the consideration by the labourers concerned of their own convenience.

The concavity of the horns at the east end was filled up for a space of 2 feet in depth with fine, small stones, outside of which again came larger stones, all evidently arranged intentionally, and in no way owing their disposition to the disintegration of the tumulus into talus. The horned east end, therefore, which, to us, when we had removed these masses of stones, presented a magnificent and striking appearance, was not preserved to the eyes of the early Britons, who erected it, nor, till 1874, had it been presented to those of anyone else.

The almost perfect state in which one skeleton found in the passage was recovered enhances the regret with which we have to think of the rifling of the "chamber," and the destruction, for craniological purposes, of the nine, or possibly more, bodies it contained. This skeleton was much contracted, lying on its left side, with the head at south-west by south, with the right hand up to the face, and the left at the elbow of the right arm. The two skeletons which lay beneath this one had been disturbed, probably, when its owner came to be buried. One of the two disturbed skeletons had belonged to a child about two or three years of age, and it lay under the lower part of the man's skeleton, having all its upper part in position, with its head to the north. Close to the child's head was the arm-bone of a woman from 18 to 20 years of age, of whose skeleton the lower vertebræ and pelvic bones were *in situ*, whilst the rest had been disturbed, and the skull was missing. The femur was recovered, however, and being 15·9 inches in length,

gives a stature of 4 feet 10 inches; one disproportionately small, as compared with that of the male, which was 5 feet 5 inches.

No record has been preserved, or, at least, has been recovered by us, as to how the nine bodies, or more, which the chamber contained had been packed away in its area of 7 feet by 4. Some further interest is given to this barrow by the fact that some secondary Saxon burials were discovered in it in the November of 1874. Two of the three bodies discovered upon this occasion had been disturbed; one was in the extended position, and still *in situ* from patellæ to lower jaw, inclusive, but had suffered some displacement, owing, probably, to the exceeding shallowness (9 inches) of the grave in which it laid. With this skeleton were two buckles, one on each shoulder, a knife on the pelvis, an amber bead near the sternum, and a piece of red pottery (pseudo-Samian) at the feet. The bones show the skeleton to have been a woman's, of about 30 years of age, and the mode of burial shows the sex and nationality to be as above stated. The head was at the south, the hands upon the pelvis. Lying upon the chest of this skeleton were a number of fragments of another adult skull, and to the right of its knees were the femur, tibia, and humerus of a strong old man; and about 6 inches from the right humerus of the female skeleton were parts of the skull of a baby, some fragments of which were also found over the female skeleton, and between its legs. Probably, or all but certainly, the two skeletons of the baby and of the old man had been disturbed and replaced when the woman was buried. Some bones of ox and of sheep, the latter differing much in size, were found in this grave. The grave was about 18 feet from the re-entering angle of the horned east end, and probably to it may belong a "spindle whorl" of stone, found October 5th, by Canon Greenwell, 3 feet 9 inches from surface, when making a large excavation close to the spot where, a little more than a month later, viz. November 7th, the female Anglo-Saxon belonging, as she and her tribe might have phrased it, to "the spindle side," was exhumed.

Traces of another secondary burial, which, though earlier than that of these Saxons, was later than the burials of the occupiers of the chambers, and the passage leading to it, may be supposed to be furnished to us by the discovery of some fragments of a very beautifully ornamented drinking-cup on the top of the barrow, very near the apex of the south horn at the east end.

At the opposite end of the barrow, on its south side, and about 6 feet from the south end of the chamber containing the fragments of nine bodies, a piece of a red deer's antler, partly cut, was found among the small stones and clay, which at that

point formed the lower part of the mound. Bones and teeth of sheep, ox, and calf, as also a piece of burnt bone, probably human, were found elsewhere, some 3 ft. deep, some at the very bottom, in the barrow; and bones of sheep, ox, and pig were found in the chamber, together with the human bones.

Osteology and Craniography of human remains from Swell vii.—Under the label, "*Swell vii. gen.*," signifying bones from the interior of the chamber generally, and under the label, "*Swell vii.* 1," we have bones proving the presence in the chamber, and in the passage leading down to it, of no less than twelve bodies, eleven being bodies of adults, and one the body of a child. Two of the adults from this barrow appear to have been about 20 years of age, one about 30, and the rest to have been in middle life or beyond it. The long exposure to indiscriminate plundering which this chamber had undergone, accounts for the fragmentary condition to which most of the bones still left in it had been reduced; had a freer entrance been made into it, however, even what has been saved to us would long ago have been irrevocably scattered. Some of the long bones, however, have escaped, so as to allow us to measure them, and draw from these measurements conclusions very similar to those which the remains found in the two other long barrows here described have enabled us to draw. Some of the femora and some of the humeri, for example, must have belonged to men of very great muscular power, whilst some of the other long bones must have belonged to females of eminently small size and strength. Two radii, for example, measuring, one of them, $8\frac{3}{10}$ in., and the other, $7\frac{8}{10}$ in., and being exceedingly slender, though obviously adult, enable us to say that their owners must have been ill-nourished women, such as are the wives of savages, of a stature, in the one case, of 4 ft. 9 in., and in the other, of 4 ft. 7 in. The femora of the male and female skeletons found lying at the entrance to the chamber being 18·1 in. and 15·9 in. in length, respectively, gives us for their owners the disproportionate statures of 5 ft. 6 in. and 4 ft. 9 in., respectively. A similar disparity exists between the clavicles; an observation made, like several others relating to this barrow, also in the cases of the other barrows examined here, and in the case of the human remains from the caves* of Gibraltar, examined by Professor Busk. Six lower jaws were recovered from this chamber, all but one of which must have belonged to strong adult men. The body of the bone lies, in nearly every case, evenly, on a horizontal surface, and forms a right angle, or something nearly approaching a right angle, with its ramus. The mental foramen lies far back in several instances, and the alveolar portion of the mental

* See "Transactions Prehistoric Congress," Third Session, p. 54.

region is largely developed. In every case but one the full number of teeth was retained up to the time of death, even though the teeth are very much worn in most cases, and in some even down to close upon the fangs. There was only one case of caries. Mr. Mummery* has made similar observations to these in relation to Dr. Thurnam's Wiltshire skulls, remarking, in addition†, that a much less favourable state of things prevailed as to the dentition of the dolichocephali from the Yorkshire Wolds.

There were two humeri from this barrow, both evidently female, and possibly from the same individual, with olecranic perforations. Of the opposite condition of hyperostosis we have an example in the supraciliary ridges of one fragmentary and one nearly perfect frontal bone, the ridges not being underlaid by sinuses, but made up of cancellous bone. There were found here also one specimen of an ossified thyroid, and one of anchylosis of the dorsal vertebræ.

Many of the bones are encrusted with stalagmite; and a considerable number, both of the human bones and of the bones of sheep, ox, and pig which were found in the chamber, were discoloured by the manganic oxide, a circumstance which renders probable at once the contemporaneity and the antiquity of both.

Description of skull belonging to male skeleton found in passage leading into chamber.—Swell vii. (1, 1).—The bones of this skeleton show their owner to have been a man of about 30 years of age, traces of the suture between the first and second sacral vertebræ being still to be recognised in the middle line; to have been of average muscular strength, and of a stature of about 5 feet 5 inches. With his bones came also the jaw of a young pig, just as was the case with the bones from the chamber in Swell i.; as also some bones of a sheep or goat.

Cranial Measurements.

Ext. length . . .	7·4	Cephalic index . .	·76
Ext. breadth . . .	5·6	Antero-posterior ind.	94:189
Vert. height . . .	5·65	Distance from auditory foramen to fronto-nasal suture	4·3
Least frontal width .	3·8		
Frontal arc . . .	5·2		
Parietal arc . . .	4·8	Distance from auditory foramen to nasal spine	4·2
Occipital arc . . .	4·7		
Circumference (approx.)	21	Distance from auditory foramen to alveolar edge	4·4
Glabello-inial length	7·3		
Height of orbit . .	1·35	Width	1·6

* "Transact. Odont. Society," Nov. 1869, p. 13. † P. 15, *l.c.*

Interangular diameter of lower jaw	4·1
Depth of symphysis	1·4
Width of ramus	1·4

This skull has the typical dolichocephalic contour when viewed in the norma lateralis, though by mere measurement it is less dolichocephalic than skulls from similar barrows usually are. The highest point in its evenly curving antero-posterior arc is at the coronal suture. Its most striking characteristic is the prominence of its parietal tubera, which mark the point of its maximum breadth. From this level the skull is wall-sided downwards, and to complete the character of an "ill-filled"* skull, it slopes upwards from the same level to the sagittal line. It further shows a flattening externally and a convexity internally over the posterior inferior angles of both parietals, an appearance corresponding to the presence of certain irregular fissures in the brain, immediately posterior to the middle temporo-sphenoidal convolutions, and indicative of a lowly developed brain. The mastoid, the glabellar, and the supraciliary ridges are largely developed, and the latter are not underlaid by any frontal sinuses.

Viewed in the norma verticalis, the skull is pear-shaped, tapering rapidly from the level of the parietal tubera, both forwards and backwards. The parietal tubera are situated well forward, occupying a point which is at the 105th division out of 189 of the line of the whole length of the skull from the forehead backwards. The occiput is blunted posteriorly; and in these two latter particulars the skull resembles the "Sion types" of His and Rütimeyer. It is phœnozygous, as the "Sion types" are sometimes, though not always. The three principal sutures are complexly denticulated; the sagittal is nearly obliterated in the fifth of its length, corresponding to the entirely obliterated foramina emissaria. Internally the obliteration of the sutures has progressed much further than it has externally, and the walls of the skull are thick. In the norma occipitalis the pentagonal outline is very well marked, the lateral walls inclining inwards from the level of the tubera, and the roof falling away from a well marked sagittal elevation. The conceptacula cerebelli have the horizontal position so characteristic of dolichocephalic skulls. The palate is deep and elliptical. The wisdom teeth are little worn; the teeth anterior to them, on the contrary, very much. The lower jaw lies evenly on a horizontal surface; the alveolar portion of the mentum is largely developed; the inferiorly placed, triangularly

* For use and application of this epithet, see Cleland, "Phil. Trans.," 1869.

contoured portion of the chin is less in proportion than is usual in European skulls.

Explanation of Plates IV. to VI.

Plate IV.

Fig. 1.—Ground plan of Long Barrow, *Swell i.* The actual outlines as observable in 1867, 1868, and 1874 are given in continuous lines; the dotted lines represent a conjectural restoration of the original outlines. *a.* Eastwardly-lying "horns," conjecturally restored after analogies furnished by Long Barrows at Uley, figured in "Crania Britannica," Pl. v., and "Archæologia," xliii. p. 49; by barrows in neighbourhood of Swell figured below (Pl. v. and Pl. vi); and by Caithness cairns, figured by Dr. Anderson, "Proc. Soc. Ant. Scot.," 1866-1868, Plan vii. Compare p. 141 *supra.* *b.* Chamber discovered in 1867, and containing then three skeletons, as described above at p. 144. *c.* Line limiting to the eastward a zone of from 2 feet 8 inches to 3 feet 6 inches in width, containing in various parts of its length eight human skeletons. See above, p. 142. *d.* Penannular structure, figured on larger scale in next figure, and described at p. 142.

Fig. 2.—Penannular structure, meaning doubtful, discussed at p. 142. From an anastatic drawing by the Rev. David Royce.

Plate V.

Fig. 1.—Ground plan of Long Barrow, *Swell vi.*, reduced from plan taken by Sir Henry Dryden, Bart. The actual outlines, as observed in 1874, are given in continuous lines; the westward end is given in dotted lines, as conjecturally restored after analogy of Long Barrow, *Swell vii.*, Pl. vi. fig 1. See note, p. 153. *a.* Eastwardly-lying horns as actually seen in 1874. *b.* Westward end as conjecturally restored. *c.* Ruins of chamber described at p. 155. *d.* Ruins of cist described at p. 156, and named *Swell vi., Cist* 1. It contained parts of two adult human skeletons, of four skeletons of children, and of a dog's skeleton, as well as bones of ox and sheep, or goat, within a space of 5 feet 6 inches by 4 feet. *e.* Ruins of cist described at p. 159, and named *Swell vi., Cist* 2. It contained parts of no less than ten human skeletons. *f.* Cist described at p. 159, and containing bones of a single individual, between the ages of 12 and 16, together with an urn of coarse black ware.

Fig. 2.—Longitudinal section of Long Barrow, *Swell vi.*, reduced from section taken by Sir Henry Dryden, Bart. The more closely-placed slanting lines represent the natural ground.

Fig. 3.—Chamber, with passage or gallery leading to it from Long Barrow, *Swell vii.*, shown, in ground plan, at fig. 1, Pl. vi. *a*. Chamber containing, when examined in 1874, parts of nine or more human skeletons, together with a few bones of sheep or goat, ox, and pig—all domestic. Its walls are seen to consist of vertically-set flags and horizontally-arranged layers of smaller oolitic stone. *b*. Doorway marking limit between the chamber and the gallery leading to it. *c*. Position of the three skeletons found externally to the chamber (see p. 166).

Plate VI.

Fig. 1.—Ground plan of Long Barrow, *Swell vii.*, reduced, as are also the two following figures, from a plan taken by Sir Henry Dryden, Bart. *A*. Westward quadrangular end of barrow. *B*. Eastward horned end. *C*. South wall of barrow. *D*. North wall. These letters correspond with those used in the two sections subjoined. *a*. Chamber containing parts of nine or more skeletons. *b*. Gallery leading to the chamber, and containing parts of two skeletons, and one entire skeleton (see p. 165, and fig. 3, Pl. v.). *c*. Site of Saxon graves a little less than a foot deep (see p. 167). *d*. Excavations made by Canon Greenwell.

Fig. 2.—Longitudinal section of barrow from point marked *A* to point marked *B* in fig 1. The more closely-placed slanting lines represent the natural ground. Reduced from section by Sir H. Dryden, Bart.

Fig. 3.—Transverse section of barrow at points marked *C* and *D* in fig. 1 (see p. 166). Reduced from section by Sir Henry Dryden, Bart.

Discussion.

Mr. Hyde Clarke observed, that in the Rocky Mountains there were tall savages, with the usual proportion between the sexes, but that in the case of one tribe the men were tall, like those of the neighbouring tall tribes, and the women were short, like those of the Utahs, Shoshones, and other short tribes. The difference was supposed to be due to a mixture of race. It was to be remarked that the language is that of the short tribes.

Professor Hughes inquired whether it was clear that the bones, &c., had been burnt where now found; for if they had been burnt elsewhere, probably some chalk thrown in with them would be found unburnt, whereas all the chalk subjected to such a fire as that described would probably be converted into caustic lime, and if water percolated, would set in a form which could not be mistaken for chalk. He suggested that the irregular manner of occurrence of the parts of the same skeleton might, in some cases,

be explained by the falling-in of masses of mixed chalk and bodies, as the fuel which supported the mass, on being burnt, gave way.

Mr. PRIDEAUX observed, that he did not believe there was any evidence which authorised the conclusion that the difference in size between the male and female in man was dependent upon the stage of civilisation attained. He regarded it as a race characteristic, and one that varied greatly amongst the civilised inhabitants of Europe. On the whole, there was a greater difference in size between the male and female in England than in France. Nowhere had he noticed the difference so slight as amongst the dark-eyed race inhabiting Glamorganshire, supposed to be descended from the Silures mentioned by Cæsar, quite a large proportion of the women being fully equal in stature to their husbands.

The PRESIDENT and Mr. MUMMERY also joined in the discussion, to which the author replied, and the meeting separated.

APRIL 27TH, 1875.

Colonel A. LANE FOX, *President, in the Chair.*

The minutes of the last meeting were read and confirmed.

The following new members were announced: Mrs. ALFRED MORRISON, 16, Carlton House Terrace; Miss A. W. BUCKLAND, 6, Beaufort Buildings, Bath; Miss BARBARA MURRAY, 4, Westbourne Crescent, Sussex Gardens; LOUIS A. LUCAS, Esq., 2, Putshill Place, Kentish Town.

The following list of presents was read, and thanks were voted to the donors:—

FOR THE LIBRARY.

From the INSTITUTION.—Journal of the Royal United Service Institution. Vol. XVIII. No. 79.

From the INDIA OFFICE.—The Primitive Tribes and Monuments of the Nilagiris. By J. W. Breeks.

From the IMPERIAL ACADEMY OF SCIENCES OF VIENNA.—Sitzungsberichte (philos.-histor. Classe) Band 77, Hefte 1, 2, 3, and 4, Band 78, Heft 1, Register; do. (Math.-Naturw.), 1874, I Abtheil, Nos. 4, 5, 6, and 7; II Abtheil, Nos. 4, 5, 6, and 7; III Abtheil, Nos. 1—5, 6, and 7.

From the ACADEMY OF SCIENCES OF CRACOW.—Memoirs of the Math. and Naturalhist. classes; Dissertation of the do. do.; The People of Cracow and the Environs. 4 Vols. By Oscar Colberg.

From the SOCIETY.—Bulletin de la Société d'Anthropologie de Paris. Vol. IX. No. 4. Vol. X. No. 1.
From the EDITOR.—Revue Scientifique, Nos. 42 and 43, 1875.
From the EDITOR.—Nature (to date).

The following paper was read by the author:

On the HEIGHT *and* WEIGHT *of* BOYS *aged* 14, *in* TOWN *and* COUNTRY PUBLIC SCHOOLS. By FRANCIS GALTON, F.R.S.

MY principal results may be briefly stated. They show the comparative heights and weights of those boys who were 14 on their last birthday, in two groups of public schools. The one group is composed of schools situated in the country, and comprises Marlborough, Clifton, and Haileybury, together with the boys of the ages of 13 and 14 at Wellington, and those of the fourth form at Eton. The other group consists of schools situated in large towns, and comprises the City of London School, Christ's Hospital, King Edward's School at Birmingham, and Liverpool College. It appears that the boys of the above-mentioned ages in the country group are about $1\frac{1}{4}$ inch taller than those in the town group, and 7 lbs. heavier; also that this difference of height is due, in about equal degrees, to retardation and to total suppression of growth; and, lastly, that the distribution of heights in both cases conforms well to the results of the "Law of Error."

There remains, however, more to say which cannot be dealt with so concisely. I have to show that these results, scanty as they are, may be depended on, and to point out the reason which compelled me, and will, I fear, compel others who may work on these school statistics, to limit their inquiry to the age of 14. I also desire to illustrate by this memoir a method I have lately proposed ("Philosoph. Magazine," Jan. 1875) for dealing with statistics of the present kind, and which appears to me far more satisfactory, and which is much more natural, so to speak, than those hitherto in use.

My data are given in Table I., and are of the form: so many boys between 51 and 52 inches, so many between 52 and 53, so many between 53 and 54, and so on, giving a total of so many. I reduce all these figures to per centages, to the nearest integer, in order that we may in each case be supposed to be dealing with exactly 100 boys. For further explanation, let us refer to the line B in the data of heights of town public school boys, where we shall see what would take place supposing we had arranged 100 of them, in the strict order of their heights, at equal distances apart, along the side of a wall 100

TABLE I.—Number of Boys Aged Fourteen on their last Birthday, in the Country and Town Public Schools, whose Heights and Weights lie between the limits mentioned below.

HEIGHTS IN INCHES.		49 to 50	50 to 51	51 to 52	52 to 53	53 to 54	54 to 55	55 to 56	56 to 57	57 to 58	58 to 59	59 to 60	60 to 61	61 to 62	62 to 63	63 to 64	64 to 65	65 to 66	66 to 67	67 to 68	68 to 69	69 to 70	70 to 71	71 to 72	72 and above	Totals.
In Country Schools.	A. As observed	...	...	1	2	1	9	10	6	21	24	40	34	35	29	23	19	19	11	5	5	1	0	1	...	296
	B. As reduced to per cents.	...	...	0	1	0	3	3	2	7	8	14	11	12	10	8	7	6	4	2	2	0	0	0	...	100
	C. Sums of figures in B, from beginning.	...	...	0	1	...	4	7	9	16	24	38	49	61	71	79	86	92	96	98	100	...	...	...	...	...
In Town Schools.	A. As observed	1	0	2	6	13	14	37	39	45	54	57	60	52	48	29	17	15	4	5	5	...	...	...	...	509
	B. As reduced to per cents.	0	0	0	1	2	3	8	8	9	11	11	12	10	10	6	3	3	1	1	1	...	...	...	...	100
	C. Sums of figures in B, from beginning.	...	...	...	1	3	6	14	22	31	42	53	65	75	85	91	94	97	98	99	100	...	...	...	...	...

WEIGHTS IN POUNDS.		56 to 63	63 to 70	70 to 77	77 to 84	84 to 91	91 to 98	98 to 105	105 to 112	112 to 119	119 to 126	126 to 133	133 to 140	140 to 147	147 to 154	154 and above	Totals.
In Country Schools.	A. As observed	...	2	9	18	44	62	61	33	22	25	12	1	5	2	...	296
	B. As reduced to per cents.	...	1	3	6	15	21	21	11	7	8	4	0	2	1	...	100
	C. Sums of figures in B, from beginning.	...	1	4	10	25	46	67	78	85	93	97	...	99	100	...	...
In Town Schools.	A. As observed	1	18	60	83	99	89	65	39	32	9	10	2	3	...	...	510
	B. As reduced to per cents.	0	3	12	16	19	18	13	8	6	2	2	0	1	...	...	100
	C. Sums of figures in B, from beginning.	...	3	15	31	50	68	81	89	95	97	99	...	100	...	...	...

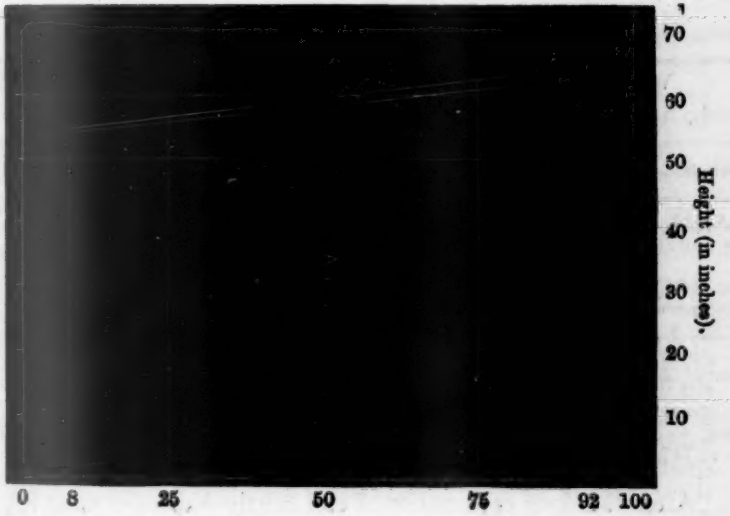
yards, or other divisions, long. A rod at the end of the first division would divide the boy under 53 inches from the 99 boys who were above 53 inches; another rod placed two divisions further (or three divisions in all from the beginning, as is shown compendiously in line C), would divide the 3 boys under 54 inches from the 97 above 54; another at the 6th division from the beginning would divide those under 55 from those above 55, and so on. Let, then, marks be put on the successive rods, at the several heights of 53, 54, 55, &c., inches, and draw upon the wall with a piece of chalk a flowing line joining those marks. This line or curve would just touch the heads of all the 100 boys, and would give an exact, *natural*,* and permanent record of the distribution of heights throughout the school. I draw such a line, not on the face of a wall 100 yards long, but within the compressed limits of a piece of ruled paper, in which each boy is represented by the narrow interspace between two lines. "Sectional" paper, divided into inches and tenths, is more than sufficient for the purpose, and, by its use, the curve which we had supposed to extend over 100 yards, is most easily compressed into 10 inches, as in the diagrams I submit for inspection. (*See* fig. page 177.)

On precisely the same principle can the distribution of weights or any other quality be protracted.

It remains to record these curves in a way that shall admit of their being compared arithmetically, and shall at the same time give us the usual objects of statistical inquiry, such as the "Average," and the "Probable Error." This is done by measuring a few appropriate ordinates, the same in every case, as I proceed to show. First, let us consider the peculiar shape of all such curves. There must of necessity be a remarkable similarity between them, due to the general fact, that in every group of objects that statisticians deal with, those of medium value are more numerous than those which are either large or small, and that, as the deviation from the mean value increases, the rarity of objects characterised by that degree of deviation increases with still greater rapidity, consequently the curves of which I speak must always have a long, steady slope about their middle; they must bend downwards with increasing curvature at one end and upwards at the other. They are therefore, of a necessity, curves of contrary flexure, such as are known in the idiom of architects as "ogives." Owing to their general shape as thus described, it would be a misdirection of labour to measure many ordinates about their middle. All that is really necessary, in such an instance as we are considering,

* Compare with Quetelet's method, as described and figured in his "Anthropometrie," p. 266.

is (1) the middle ordinate, which gives directly the *average* value, in the sense that as many cases fall short of it as exceed it; (2) and (3), ordinates at the 25th and 75th divisions. The latter divide the group into three parts, small, medium, and large, the medium being as numerous as the other two put together. Also, wherever the Law of Error applies, the difference between either of these ordinates and that at the 50th division, is identical with the well known quantity called the "Probable Error." I take the 4th and 5th ordinates at the 8th and 92nd divisions: they are those which, when the Law of Error applies, differ from the 25th and the 75th, by exactly the same amount as either of these differs from the 50th. Such is approximately the case in the instances of height before us, when the common difference, as shown in Table II., is about 2·35 inches. These ordinates can readily be protracted (*see* fig.) to form



a diagram, and their tops joined with a flowing line, which will reproduce the original curve in a more regular form; or they can be treated arithmetically, as in Table II., whence those conclusions were drawn which were stated at the beginning of this memoir. I should add, that the precise mean difference of stature, &c., in the two groups of schools, is given by the units of area of the interval between the collated curves, divided by the units of length in its base, and that this area may be measured readily and accurately by the ingenious little instrument called a planimeter.

TABLE II.—COMPARATIVE HEIGHT AND WEIGHT OF PUBLIC SCHOOL BOYS, AGED FOURTEEN LAST BIRTHDAY.

	Ordinate at 8th Division.	Difference between Grades.	Ordinate at 25th Division.	Difference between Grades.	Ordinate at 50th Division.	Difference between Grades.	Ordinate at 75th Division.	Difference between Grades.	Ordinate at 92nd Division.
HEIGHT.	inches.		inches.		inches.		inches.		inches.
Country Schools	56·4	2·7	59·1	2·0	61·1	2·4	63·5	2·5	66·0
Town Schools.....	55·2	2·1	57·3	2·4	59·7	2·3	62·0	2·3	64·3
Differences between Country and Town Schools...	1·2	...	1·8	...	1·4	...	1·5	...	1·7
Sum of differences between successive grades.....	...	4·8	...	4·4	...	4·7	...	4·8	...
Mean of above	...	2·4	...	2·2	...	2·35	...	2·4	...
WEIGHT.	lbs.		lbs.		lbs.		lbs.		lbs.
Country Schools.....	81	10	91	8	99	11	110	15	115
Town Schools.....	73	9	82	9	91	11	102	14	116
Differences between Country and Town Schools...	9	...	9	...	8	...	8	...	9
Sum of difference between successive grades.....	...	19	...	17	...	22	...	29	...
Mean of above	...	9·5	...	8·5	...	11	...	14·5	...

NOTE.—According to Quetelet's "Anthropometrie" the average height of Belgian Boys at 14 is only 1·469 (= 57·8 inches), and their weight 37·1 kilos. (= 82 pounds).

After this long explanation, I can briefly dispose of what remains to be said. The reason why I could not compare other ages than 14 is to be found in the data given by Table III., which show that the numbers of the boys of the various ages varies considerably. There are only 99 boys in the country school group aged 12, but 265 aged 13; consequently the average age of the boys aged 12 certainly exceeds 12½, and must not be taken at that figure. I have protracted the curves for all the ages, both for height and weight, and find the existence of this cause of error to be unmistakeable. It seems, however, that we may neglect it as trivial in both groups at the

TABLE III.—Number of Boys of Various Ages in certain Public Schools.

		AGE LAST BIRTHDAY.							
		10	11	12	13	14	15	16	17
Country Schools.	Marlborough .	3	14	34	96	90	140	103	47
	Clifton . . .	6	43	34	65	93	99	80	49
	Haileybury . .	...	...	9	37	77	92	70	42
	Wellington, in part	...	...	19	46	...	...	...	...
	Eton, 4th Form	...	1	3	21	36	16	3	...
	Total . .	9	...	99	265	296	347	256	138
Town Schools.	City of London	42	57	96	102	109	57	23	14
	Christ's Hospital	29	114	175	171	188	110	4	10
	Birmingham .	62	69	106	123	100	81	29	18
	Liverpool College	28	54	116	105	112	54	20	16
	Total . .	161	294	493	501	509	302	76	58

age of 14. It is true, that the town school figures show a great falling off at the age of 15; but I understand this to be chiefly due to the fact of many boys leaving between 15 and 16, rather than to a commencing diminution between 14 and 15. The run of the curves confirms this view. However, the error, such as it is, raises the country schools somewhat above their true level, and depresses the town schools; and it may be held accountable for an error in the difference between them of, perhaps, a tenth of an inch, or even a trifle more. Therefore, instead of the statistical result of 1·4 inch difference of height, as shown in Table II., it is better to say about one and a quarter inch. Similarly, the 8 lb. of difference might be reduced to 7.

The curves I have drawn for the different ages show a tendency in the town boys to make up, as they grow older, for their early deficiency in height, but they never reach the standard of the country schools. I, therefore, conclude that the deficiency at the age of 14 is partly due to retardation, and partly to total suppression, of growth. The weight of the taller boys in towns does not increase with their height in the same proportion as among the country boys; in other words, the tall town boys are slight.

As regards the dependence to be placed on the results, it seems justified by the number of cases observed, and by the fact that the curves of height (of course, not those of weight) conform fairly to the Law of Error, as has already been pointed out;

also, as already remarked, the curves of heights and weights for consecutive ages form as good a series as we have a right to expect.

In conclusion, I fear that the statistics, in the form in which they have been hitherto asked for, cannot be so worked as to give as just an idea as we desire of the growth of English boys under different conditions, and that it will be necessary to modify our schedule by asking with more minuteness concerning age.

Discussion.

Mr. Wm. Harding said that it might be desirable to understand with some exactness what was meant by the author of the paper by "the town and the country boy;" that if a great city like London were selected, and boys born and reared within its meshes were given as examples, then the superior development of the country boy would be at once conspicuous from every point of view; that it was scarcely possible to make superficial observation without noticing that the children who fell to the care of guardians of the poor in the great metropolitan parishes were of diminished stature and almost stunted growth; and that, under like disadvantageous circumstances, the same may probably be the case in other large towns. But throwing back his memory to observations made during early and country life, and taking for illustration the boys from boroughs of from five to thirty thousand inhabitants, then to him the comparison gave this result, *i.e.* the country boy was heavier, stronger, slower, and of larger chest-girth than the town boy, but that, as a rule, he was *shorter*. The town boy, on the other hand, was lighter, more active, smaller in his chest development, but, as a rule, he was *taller*. The subject was of some interest and deserving of observation, because if the town boys were (as many suppose) really degenerating in stature, it opened out rather an uncomfortable-looking future, as, once establish a true degeneration, and the hereditary principle must step in and help to secure its permanence.

The President, Mr. Charlesworth, and Mr. Harrison having spoken,

Mr. Galton, in reply to the remarks of the various speakers, saw no cause of objection, in combining, as he had done, all the boys who were 14 on their last birthday in a single group. Of course, some of them were only just 14, and others were nearly 15, and a few cases of very short, and of very tall, stature might be chiefly due to that cause. But statistics did not concern themselves with exceptions, but with the mass, and, in the particular form of discussion which he had adopted, both ends of the series—the shortest and tallest—were excluded. No doubt the town group includes several cases of boys of country origin; but the distinction of town boys in the town group, and of country boys in the country group, is undoubtedly the prevailing characteristic. It should be noticed, that in the pre-eminently town school of the City of London, the

boys' stature was the smallest. It was not maintained by Mr. Galton that the deficiency of size in the town group was altogether due to bad effects of nurture on the individual boys; on the contrary, he would be disposed to ascribe much of it to the town life of their parents, and probably of other ancestors; but these were subjects requiring more statistics than were before them at present, before they could be properly discussed.

The following paper was read by the author:

On the ORIGIN *and* PROGRESS *of the* PEOPLE *of* MADAGASCAR. By JOSEPH MULLENS, D.D., Foreign Secretary of the London Missionary Society.

IN recent years special interest has been taken by Englishmen in the people of Madagascar. For a long period a bitter persecution was waged against the few Christian converts in the island; they were found to be heroic and faithful, and at length, as the result of their steadfastness, suddenly a strange transformation of the chief tribes took place; the idols were burned, and the rulers, nobles, and inhabitants in the Central Provinces declared themselves Christians. Many friendly travellers have since visited them. A cordial interest in the growth of the nation has been shown by both the English and French Governments; the export and import trade of the island has steadily increased to about £500,000 a year, and the course of improvement has been stimulated in a variety of ways.

Many books have been written both about the land and the people of Madagascar. But just as the descriptions of the country and its maps were (till lately) derived almost entirely from the memoir and map of Colonel Lloyd, so to a very large extent the descriptions given of the language, history, and customs of the people have been drawn from the ablest work on the subject, the "History of Madagascar," in two volumes, written by the Rev. W. Ellis, in 1838. The time has come to revise these views of former days. As much has been added of late to our knowledge of the geography of the island, so, many things have become clear which were formerly obscure, in relation to the people. During a twelve months' visit to the island, I have had the opportunity of travelling over all the Central Provinces, and of seeing much of the people, as well as of hearing of their past history and present progress. I gladly avail myself, therefore, of the opportunity which has been kindly furnished to me by the President and Council of this Institute, to state to its members some of the conclusions to which I have been led respecting them.

The Malagasy people appear to me to be a single race. Not-

withstanding a tradition about "dwarfs," nowhere do we find any tribe, or clan, or race, in any secluded corner of the land (such as we meet with in the hill districts of India, of Sumatra, and of Borneo), totally different from the inhabitants of the plains or open provinces. Nor do we meet with any portion of the people specially degraded below their fellows as a conquered and despised race. So far as known, the people of the entire island are in most respects similar to one another, and, sixty years ago, they stood on a more common level than they do now. The main differences at present existing between one portion and another, are the results of Christian education, and of compact, just, and settled government.

There is undoubtedly one distinction which may be drawn among the Malagasy: they may be divided into the dark and the fair tribes. From the first, writers on Madagascar have referred to this difference between them. But in the face of important points of agreement, I think too much has been made of it. It is well known to residents in India that low, hot, saline, and malarious districts tend to darken the olive complexion; while dry, open, cooler plains, tend to bleach it and render it fair. Now, it is the coast tribes of Madagascar, inhabiting the hot, feverish provinces, which have the dark skin; while those which occupy the central plateau, with its bracing air, are, in general, fair. Other considerations must be looked to, and I find them in the dialects spoken, and the course taken by the movements and migration of the tribes, as they gradually occupied the island. In regard to these matters, several mistakes have been made by various writers.

Judging from the movements of the tribes, and from their present relations to one another, it seems to me that the Malagasy are divided into three tribes, starting from different centres and inhabiting separate districts. The BETSIMISÁRAKA tribe and its offshoots occupy the east coast and its two lower terraces. The SÁKALÁVAS hold the broad plains of the west coast in all its length, and overlap the upper extremity of the north-east coast. The HOVAS and their branches inhabit the entire central plateau, and the flanks of its southern extremity.

The BETSIMISÁRAKAS include the Sihánakas, the people of Ankáy, and (I think also) the Tanálas, all on the higher terrace between the lines of forest. These upper divisions of the tribe have separate names; but they are merely expressive of the localities to which the people have migrated. The Betániménas are those who occupy the "districts of red clay." The Tanálas are the people of "the forest districts." The Tankays live "in Ankáy," the "open land," not concealed or broken by long hills. The Sihánakas are "the people of the lakes." In no part of the

country occupied by this tribe is the population concentrated and numerous; all their districts are thinly peopled. Important mistakes have been made in regard to these subdivisions. Both the Sihánakas and the Bezánozáno of Ankáy have been described as Sákalávas. But a visit to the districts which they inhabit shows at once that with the Sákalávas they have nothing to do. They are shut off from the latter by all but impassable mountains. They are Betsimisárakas in their houses, their dialect, and the dressing of their hair, and an examination of the country plainly indicates the points on the east coast from which this people started. In regard to the still greater error of regarding the entire Betsimisáraka people as half-breed Arabs, there is even less to be said. The statement must have originated in some mistake. It might apply to a few people in and around the Arab colony of St. Mary's; but it is wholly inapplicable to the entire people of the east coast.

The SÁKALÁVAS are also divided into tribes; but there is little cohesion amongst them; they live separate from one another, and have frequent petty wars. Their numbers cannot be great, though they occupy a large tract of rich, tropical country, which, under a settled government, and in diligent hands, would yield vast quantities of produce. They have for ages been at feud with their Hova neighbours, ever ready to carry off their cattle, and plunder their farmsteads and fields. The name they bear, "the tall cats," is a complimentary title given by their Hova foes, who have found them as fierce and formidable with the ancient weapons as any wild cat to be met with in the country. The Sákalávas have not been slow to return the compliment; and they contemptuously style the Hovas *Amboálámbo*, a mixture of "the dog and the boar," "a set of vagabonds."

The HOVAS proper now occupy all the northern portion of the central plateau, whether Vonizongo, Imámo, or other districts. And though, at one time, it was usual to describe their province as Ankova, in recent days the tendency has been to drop this term altogether, and to call the entire Hova country IMÉRINA. The BETSILÉO tribe are, without doubt, of the same blood as the Hovas. The IBÁRA tribe, who live south and west of the Betsileo, are, again, kindred to the Betsileo. Each of these sections of the central population has grown numerous, has had its separate interests, and has been at feud with its fellows. Nevertheless many similarities of language, dress, customs, and manners, exist between them, and the differences are not greater than those which divide them from the other tribes of the island. Politically, these tribes are drawing nearer to each

other under the Hova rule; and these similarities will be increased and developed rather than repressed.

In the important inquiry whence the Malagasy have come, and with what other branches of the human race they are connected, the evidence supplied by their language is of the first importance. Naturally it might have been expected that, living so near to the continent of Africa, they would be connected with the African tribes, or, at least, that some of their settlements would have been founded by African colonists. And among scholars there have not been wanting those who have argued warmly that they are substantially an African people. The views of the late Mr. Crawfurd on this point are well known. He argued that the Malagasy are substantially a Negrito people, with woolly hair, African blood, and an inability to form an alphabet; that Malay pirates, blown away from the east, had mingled with them and left their mark upon the language, and so on. Mr. Wake follows on the same side.

Even on theory it might have been objected that the African tribes are not navigators, and that the Mozambique channel, with its strong currents, and stronger south-east winds, must have been (as it still is) a formidable barrier against intercourse between these tribes and Madagascar. But, in point of fact, there is no tribe on the island (so far as it has yet been examined) which can be shown to be substantially African in its language, its features, its habits, its relations to its neighbours. There are pure Africans in abundance (as we shall see) scattered about in certain districts on the west, imported through the Arab slave trade. And the African element has tainted the original Malagasy race. But no original and distinct tribe on the island has yet been pointed out as long-settled African colonists; much less can the entire Malagasy people be identified with such a tribe. On the contrary, the three great divisions of the Malagasy hold together, embrace almost the entire island, and their language and tribal customs suggest a totally different direction as to their origin.

In illustration of this unity of the races now occupying Madagascar, I have noted with interest that the names given to localities in all parts of the island, Sákaláva, Betsimisáraka, and Hova, are of the same character, and are plainly derived from the present Malagasy language. Many of the Sákaláva names are distinctly Hova. Off the north-west coast we find Nosibe, "big island;" Nosikomba, "monkey island;" and Nosifály, "glad island." We have Ampásiména, "red sand village;" Márolahy, "the village of princes;" and Andránomalaza, "famous water." We have Márovoáy, with its

"many crocodiles;" Mojanga, "the restorer of health;" and Mevatanána, "good place for a town." On the west coast we have Máintiráno, "the black river;" Mafándráno, "hot springs;" and Mámiráno, "sweet waters." We have one town, Mánandáza, "the glorious;" and another, Malaimbándy, "the place of indolent lies." We have Fierénana in Vonizongo, and on the Sákaláva coast. We have the pass of Ambodifiakárana, among the limestone ridges of the Sákalávas; and under the granite moors on the Mania. Hundreds of names are scattered over the east and west coasts, bearing a striking similarity to those of the interior, and applied as fittingly to the places which they indicate. The names and the people are evidently one.

Baron Humboldt, the linguist, long since detected the Malay element in their language. Other writers have followed him. And the more attentively and completely the subject is examined, the stronger will the evidence of that origin appear. Unhappily, such a complete examination has not yet been made. Malay scholars have but partially understood Malagasy, and Malagasy scholars have looked but little into Malay, and we know scarcely more than was written, clearly and fully, by the Rev. J. J. Freeman forty years ago. Yet the materials are beginning to accumulate out of which the comparison may be made in full detail. Besides Marsden's "Grammar and Dictionary," in Crawford's "Malay Grammar," in Wallace's "Eastern Archipelago," in the Appendix of Dr. Turner's "Nineteen Years in Polynesia," there are lists of words and idioms in the Malay and its cognate dialects, Samoan, Máori, and Tahitian, available for the discussion of the question, and, ere long, we may hope to see it undertaken thoroughly. I have no pretensions to a knowledge of either tongue. But it happens that, during my visit to Madagascar, unpublished papers from competent men came into my hands, and I will venture to give a few illustrations which they furnish of the connection between the two languages. Mr. Freeman observes, with interest, that it is the Betsimisáraka edition of Malagasy which comes nearest to the Malay; and it is the Maláya branch of the language, rather than Javanese or Báli, which comes closest to Malagasy. Here is a simple list of twenty words:

English.	*Malay.*	*Malagasy.*
crocodile	buáya	voáya*
bone	tulang	taolang (Bets.)
fly	lálat	lálitra
fruit	búa	vóa

* The *o* in Malagasy is pronounced like the Italian *u*. This arrangement was a fatal mistake in the early writers of the language, and is calculated to mislead any one outside the island. Hova ought to have been written Húva.

English.	*Malay.*	*Malagasy.*
ground	tánah	tány
grow	túmboh	mi-tombo
hand	tangan	tángana (Bets.)
heaven	lángit	langitra (Bets.)
hang	gantong	mi-hantona
fear	tákut	tahotra
moon	bolan	vólana
stone	bátu	váto
year	tahun	táona
spirits	túaka	tóaka
mosquito	nya-mók	móka
two	dúa	róa
four	ámpat	éfat-ra
six	ánam	énina
ten	sá-puloh	folo
twenty	dua-puloh	roa-polo
thousand	sa-riba	arivo

In their structure and government the two languages resemble one another, but the Malay seems a less formed and complete tongue than the Malagasy. Both languages have the inclusive and exclusive pronouns, and the same form is used in the nominative and objective cases. In both reduplication is common. The prefixes through which the verb is conjugated, though differing slightly in form, constantly bear the same meaning in Malay as in Malagasy, and are used in the same way. In both cases the same sort of improvement was needed, and came from the same source. The Arab traders gave to each people the names of the days of the week and of the months of the year. The scales for weighing money are Arabic, *mizán*. The word for writing, *sóratra*, seems Arabic also.

Additional improvement to the Malagasy came from their intercourse with the French, who in the course of many years' visits to the coasts of the island, introduced new articles to their notice, which are still called by their French names. At least seventy French words have become naturalised in Malagasy, and that in a very curious fashion. The young Malagasy now sits upon a *seza*, in front of *látábat-ra;* his rice is brought from the *lákozy*, and he eats his beef with a *fórisét-y*. He wipes his face with a *mósara*, washes his hands with *sávona*, and dries them on a *sáriveta*. He keeps his clothes in a *lálamóra* (armoire), rides forth on his *soaváły*, and wears patent leather *bóty*.

The colonisation of Madagascar by the Malay tribes is a topic full of interest, but we know almost nothing about it. It is singular, that in the very first mention made of the island, the celebrated notice of it by Marco Paolo, he should have made a strange mistake, and mixed it with information which belongs to the Somali country around Cape Gardafui. Madagascar has neither elephants nor hippopotami, neither leopards, nor bears,

nor lions. Nevertheless it is evident that the great traveller learned something real about the island, and of that aspect of it which was especially presented to the great sailors of his time, the Arab and Persian traders, whose fathers had visited it for many ages. Sandal-wood is still exported from the northern ports, and the Hindoos carry on "a profitable trade." I do not think that the people whom Fra Mauro speaks of as blown away to the southward were connected with the original settling of Madagascar by the Malays; the accident he describes seems to me of much later date than that settlement, and that it happened to Indian traders who were sailing down the African coast. When they were blown back again, they may have seen shells of the Œpyornis, on the sandy terrace at the south-east end of Madagascar, where M. Grandidier found both shells and bones. Fra Mauro does not say that they saw the living birds. Sinbad's additions about the elephants and the jewels are applications of "travellers' tales," and traditions floating about the nautical world long before his day.

That in early times there should have been a Malay immigration into Madagascar is nothing strange. Everything new which we are learning about the Indian Ocean and the China Sea tends to show how boldly and continuously those seas were traversed before the Christian era. Phœnician navigation, both from the Red Sea and the Persian Gulf, was ably carried out even in the time of Solomon; and the evidence is accumulating that their colonies, trading settlements, and ports of call were established along all the African and Indian coasts before the Ptolemies had ceased to rule. They had long since learned the regularity of the monsoons, and decided how to employ them. Zanzibar and its neighbourhood had become the head-quarters of the Central African trade, and every year a great fleet crossed the Indian Ocean from the ports of Guzerat and Malabar with the north-east monsoon. What was a twenty days' voyage before a fair and steady breeze to men accustomed to the sea in large vessels of three hundred and eight hundred tons, such as the Alexandrian corn-ships, or the buggaloes of the Gulf of Cutch, with their strong masts, long yard, and huge sails? To me it seems that they mastered the navigation early; its continuity was never broken till Albuquerque and Almeida took it with violence from their hands; and I venture to think that in the Arab merchants of these Eastern seas, with their Khojah friends in Western India, and the "old man of the mountain" at their head, we have the lineal descendants, in blood, and language, and employment, of the Phœnicians of ancient times. Able navigation was not confined to the waters of the Indian Ocean. We know how, before the Christian era, Hindoo mer-

chants and sailors traversed the Bay of Bengal, passed the Straits of Malacca, and had flourishing settlements, temples, and palaces in Báli and the great islands of the Java Sea. The Malay races in those islands had already proved themselves adventurous navigators. We do not know how early they left their mark on all the eastern kingdoms of the Bay of Bengal—on Ceylon, which was to them Pulo Selán, "the island of gems"—and at various points along the coasts of India, as far west as Guzerat. The Chinese, too, have not been behindhand with their well-built vessels, and the compass, which they first employed to direct them. Long, long were they at work before they had formed and perfected the enormous junks which so delighted Marco Paolo, with their well-caulked seams, their fifteen watertight compartments, their fifty cabins, their three hundred sailors, and numerous families of women and children, ready to undertake long coasting voyages, or even to run up the Straits to Ceylon, or visit the three ports of India which they loved, and from which they were driven only four hundred years ago. The very finest of these vessels belonged, not to the northern ports of China, but to the harbours of Siam. Among all the Hindoo and Arab vessels I have seen in Zanzibar, Calcutta, and Bombay, none equalled in size and strength of build the noble Siamese junks which I once found at anchor, after their summer voyage northward, in the bends of the Peiho. It is when these pursuits are in full activity that ability in their management is developed in its highest forms. And what more natural than that, among these Arab, and Siamese, and Malay navigators, there should appear from time to time men of genius to shape out new enterprises, or that among their chiefs and people there should arise another Prince Henry, or Queen Elizabeth, or Ferdinand and Isabella, to foster and encourage them.

Anyhow, there the Malagasy are—a Malay people, following Malay customs, some of them possessing Malay eyes, and hair, and features, and all of them speaking a Malay tongue at the present hour. When they came, where they landed, what hindered their return, we know not. Was some large vessel caught in a furious cyclone and driven ashore? Were the first colonists few or many? Did they communicate with their friends, and get others to join them? Were several settlements established at different points? Was the colonisation continuous? if so, over how many years did it spread? Did Malay navigation extend to the east coast of Africa? and are Zambesi, Kilimány, Mombása, Kiloa, Masambika, and other names there, of Malay origin, as Mr. Freeman suggested?

Judging from modern results, I incline to think that the

original colonisation was not extensive, that the trade was found not to be remunerative, while navigation so far to the south was found to have special perils, and that the connecting link between Madagascar and Great Malaya was early severed. The population has increased but slowly during these long ages. Even now the Betsimisáraka tribes in their five divisions only just exceed a quarter of a million; the scattered Sákalávas, even in their wide and fertile plains, contentious, and ever at feud with one another, cannot exceed half a million. The three Hova divisions are strongest in numbers, in civilisation, and resources generally, and yet amount to less than a million and three-quarters altogether.

Hitherto the various writers on Madagascar, in describing the population, have all followed Mr. Ellis's estimate of forty years ago. That estimate, amounting to 5,500,000, appears to me wholly inapplicable to the present day. It was very largely guess-work, and included districts which had then scarcely been visited by an Englishman. I speak of the population as (to a large extent) I saw it, and I estimate it as follows:—

POPULATION OF MADAGASCAR.

1. Betsimisárakas, including Sihánakas, 40,000; Tanálas, 20,000; Tankáys, 50,000; Ikongos, 20,000.		300,000
2. Sakalávas, north and south		500,000
3. Hovas and cognate tribes:		
Imerina and Vonizongo	1,000,000	
Imámo and Mandridrano	100,000	
Betafo and Vákin 'Ankárat	100,000	
Betsileo	300,000	
Ibára, &c.	200,000	
		1,700,000
Total		2,500,000

The results at present produced show at least three independent movements in the settlement of the island. The Betsimisárakas have lived a quiet life on the east coast, quite independent of the other tribes, and have quietly spread up the hills into the Tanála, the Sihánaka and Ankáy. And they have preserved in simple fashion the rough tongue of their forefathers in Sumatra. Whether the Sákalávas are one people, or have sprung from more than one colony, north or south, we know not. They have had constant wars with their neighbours above the hills, as well as among themselves. A dread of their courage and skill in war has established between them and those neighbours a no-man's land of fifty or sixty miles in breadth. And their movements and their history seem to have been all along independent of others.

The only traditions and remnants of past history come from the Hovas, who also have been independent, and who, having found opportunities of development not possessed by their fellows, have come to the front among the Malagasy tribes. They tell us how their original settlement was in the south-east of the island; when commenced, how developed, lasting how long, they do not know. Results show that here they became a strong people, and, swarming off, they began to push their way up into the hills. Evidently they entered the upper plateau at its south-east corner; and, while the foremost of the tribe pushed on, other branches, gradually springing from it, and now named Betsileo and Ibara, filled in the districts behind. The advanced Hovas seem to have reached Imerina about 800 years ago. For perhaps 120 years they were on friendly terms with a tribe which they found there, if not actually subject to them.

This tribe they call Vazimba. In the present day they talk of them as their ancestors; in the idolatrous days, they were deified, and their tombs are still the most sacred objects in the country. Happily, the Hova traditions give us the names of seven Vazimba kings. These names are as genuine specimens of Malagasy as the Hova names themselves. The Vazimba tombs are of the shape and structure of the usual Hova tombs, though of rude work and rough stones. So far, therefore, as we know anything about the Vazimba, they were a true Malagasy people—there is nothing African about them.

After a while, the Vazimba and the strangers quarrelled. Contests arose, and the Vazimba were driven out of the province—"to the south-west," says the story, but that means "into the unknown." This superiority of the strangers, says tradition, was due to their use of iron. Whether they had iron while on the coast, whether their fathers had brought and retained any knowledge of its use, or whether they had learned it from their Arab friends and neighbours at Mátitánana, whether they had supplied themselves with iron-headed spears during their march up the Betsileo, or had only produced them, on arriving in Imerina, from the iron hills of Amóronkáy, it is now impossible to say. But in the assertion that they knew the use of iron, while their opponents had only spears of wood, there is nothing improbable.

They made Imerina and all the upper plateau their own; and here, for five hundred years, they settled down, and spread, and grew. They ate, they drank, they planted, they builded, they spun, and they wove. They married, and were given in marriage; they formed the iron hatchet and the iron spade; they cut down the forests, and built houses, well framed, well fitted,

with roofs that successfully shed the rain; they built villages and towns, surrounded them with deep ditches, and protected them with the cactus hedge. They grew into compact tribes, obedient to their chief and his appointed officers. The members of the tribe met in council, and, in the public assemblies, not only maintained their liberties, but developed the powers and the resources of their mellifluous language. They made war on their neighbours, or defended themselves against attack. Their kings cemented peace by marriage alliances. They made great feasts, and, though no poetry has survived, their orators could recite the traditions of the past, and their assemblies were enlivened with the dance and the song. Great heroes arose among them, like Rapéto and Ralambo, of whom wonderful stories went abroad.

Two hundred and fifty years ago the Malagasy not only began to be better known to the outside world, but light begins to be thrown upon their internal growth and condition. At that period we find the Arab merchants settled at three points on the coast, and a foreign trade steadily carried on. We find them on the east, at two points. At Mátitanana they have been settled long. They have written the Malagasy language in Arabic characters; they have taught the tribes the Arabic names of the week-days and the months; but they have made no converts.

As the first specimens of the rukh's egg were dug up here, it is possible that Sindbad's application of the old story may have been derived from some sailor who had visited the settlement. There was another Arab colony on the island above Tamatave, called by them Nosi-Ibrahim, now known by the French name of I. S^te^ Marie. Both these settlements, owing, doubtless, to the Portuguese invasion of the Eastern Seas, were in a state of decay. The third settlement, at what is now called Mojangá, had done better. It was more easily accessible; it was nearer to the head-quarters of the Arab trade at Zanzibar; it was on the lee side of the island, on a splendid bay; and both the Indian cloth trade and the traffic in slaves were carried on under favourable conditions. More than this, able men among the Arabs had watched their opportunities, had practically usurped the government of the locality, and, as the Sákalávas had no cohesion, they retained their power long. At this time, the trade of the Indian Ocean was breaking up. The Portuguese had built up nothing in the place of the power they had destroyed. The sea swarmed with adventurers. Captain Kyd and other English pirates made Madagascar their head-quarters, and French schemers were planning and contriving settlements on the sea-board, hoping in the end to obtain possession of the island.

From all these quarters the Malagasy people gained no help. Under God's care, in the quiet of the interior, they were making steady progress. It is evident from their traditions, that two hundred and fifty years ago considerable strength was accumulating in the community, broader ideas began to prevail, and efforts at closer union were put forth. Ralámbo stands first in the new line of monarchs, drawing the people onward. To him are attributed great advance in the care of cattle and the establishment of the Fandróana festival. His second son, Andrianjáka, in the days of Cromwell, founded Antanánarivo, on the hill, till then called Iálamánga. Sixty years later (about 1720), Andriamásinaválona, a man of large mind, brought the whole of the Imerina towns under his rule. He was a wise and thoughtful ruler, ready for great enterprises. To him is attributed the greatest engineering work yet executed in the province, the embankments of the river Ikopa, which prevent the annual flooding of the great rice-plain. His name is always mentioned in the public kabáries with profound respect. On his death his kingdom was broken up among his sons, but a hundred years ago all the twelve cities were re-united under Impóin-Imerina, the ablest monarch of that princely line. The border provinces, also, on every side, felt the weight of his strong hand: and his son Radáma, by hard fighting, long marches, and untiring energy, consolidated and extended the dominion on every side. Only the south-west Sákalávas and Ikongo remained independent.

Even then, with all their growing energy, the Malagasy nation was still young. Their cities were growing, the villages were becoming numerous, and, on the whole, peace was maintained. But it was often broken for a time, and the hollow valleys between the royal towns were still swamps full of reeds —a protection to each city against its neighbours. The rice cultivation was extending, but an immense area of the great plain was still occupied by these great reeds, high over head, thick, and all but impassable. It took three days to travel from the present capital to Ambohimanga, twelve miles to the north; the swamps were traversed in canoes, and enemies, with spears, might be encountered at any point, lurking in wait for prey.

In this brief sketch I cannot enter at length into the customs of these tribes. Their ancient warfare with the thin spear and round, hide shield; their cylinder bellows, and clay furnaces for smelting iron; their simple looms and spindles, have all been described and pictured by Mr. Ellis. With one thing, however, I was greatly struck—with their custom of giving over to the dead, in their large stone tombs, the dresses, ornaments, furniture, and possessions which were favourites while they lived.

And I remembered how the Malay tribes of Polynesia and the North American Indians have been accustomed to do the same. Another custom was to exhibit, by rows of cooking stones, or of bullock skulls on poles, the extent to which the funeral feasts had been carried in honour of the dead, and the estimation in which they were held.

The social life of the capital at the beginning of this century shows, in a very striking way, how poor, as compared with other nations, the civilisation of the Malagasy still was. Almost no European improvements had reached them, except the firearms which they had obtained from the coast, and which proved a powerful instrument in securing the consolidation of the kingdom. When Le Sage visited him, Radáma was a thorough Malagasy in his dress, his superstitions, his house, his habits. He was dressed in a lamba, and sat on the floor, to eat, with his hands, out of a silver dish. His people were the same, and when they met Le Sage, and gave him a royal reception as the English envoy, they were covered with silver ornaments, and shouted, and danced, and sang around the strangers with truly barbaric pomp and show. In mental grasp, and in their longing for better things, Radáma and his father were much beyond all this. Radáma was a gentleman in his manners—courteous, considerate, hospitable, and kind. Both kings were wise in council, energetic in action, eloquent in speech. Both were humane in purpose, though, in despotic hastiness, they were often cruel; both were truthful, straightforward, and truly anxious to improve. They were fine illustrations of the weaknesses of Madagascar, as well as of its native strength and native virtues.

Beneath the surface lay many proofs of the backwardness of the people. Life and property were insecure. There was much poverty; few incentives existed to active industry. The country was destitute of roads; systematic travelling and intercourse between the different parts of the country was all but unknown. To me, one of the most instructive illustrations of the state of the island, and of the relation of its people to the world at large, is furnished by an event which occurred at this time on the north-western coast. On more than one occasion, at the end of last century, the Sákaláva tribes had taken advantage of small vessels in calm weather; had seized them, brought them to land, and burnt them for the sake of their copper and iron. Gathering together hundreds of men, they had undertaken occasional expeditions against the Comoro Islands, and harried and robbed their people. But in 1816, they planned a great expedition against the fort of Ibo, near Mozambique, three hundred miles away. They gathered no less than two hundred and fifty canoes, containing 6,250 men, and set out on their expedition.

They were overtaken by a violent hurricane, and only sixty-eight canoes reached the African shore. That was in 1816; yet it reads like a page from "Robinson Crusoe," or a story from the South Sea Islands.

I need not pursue the history. With Radáma we have reached our own times; we have reached modern efforts, modern improvements, modern missions. Often has the later story been written. It is told by Mr. Sibree in his little book, and by Mr. Ellis, in his "Martyr Church," effectively and with brevity. Let us look at the people as they are. At first sight my colleague and I thought them backward; but the more we reflected on the past, on their complete isolation from the great world around them, the simple framework and the small attainments of their natural and social life so late as sixty years ago, the more thoroughly we appreciated the great stride in progress which they have taken in that brief period. Many officers of Radáma's day are still living, with their antiquated coats and antiquated notions, and till very recently they have much hindered change and trammelled advance. But solid progress has been made. It has been made in their outer life; but, best of all, it has been secured in far greater degree in their religious character and in their moral and social habits. Indeed it is a matter for special congratulation and thankfulness that it is that moral improvement which has come first, and that it is so deeply rooted and so widely spread. The external civilisation will follow quite rapidly enough.

In the form of their national life the Malagasy are still a federation of Malay tribes. Each of the greater tribes has numerous subdivisions, at the head of which are the noble families and princes descended from the great chiefs of former ages. Among these, the immediate descendants of the ancient kings of all the sections and cities of old times occupy an honoured place. The feudal rights, dignities, and privileges of these noble clans are carefully maintained, as well as their feudal duties faithfully performed. All the common ranks of the people are enrolled and included among the clients and followers of these inferior chiefs and princes, or among the direct followers of the sovereign. All payments for taxation within the tribes are made in kind, or in feudal service rendered. Officers are remunerated by lands, or by the assignment to them of the service of so many inferior men. Rice, sugar-cane, lambas, firewood, beams for building, bundles of thatch, stones, pork, beef, are all rendered to them and to their superiors as part of that service. Under the law of Rálámbo, the rump of every ox slaughtered in the capital is delivered to the queen. On a message from the queen, asking for any special form of service, local meetings are

held by the clans to arrange as to the mode of distributing it. The term used to denote this system is *fánampóana*, which means, exactly, "service," and it bears all the variety and breadth of meaning which the English word had in feudal times. Though having in it just elements, the system has many weaknesses. It bears heavily upon the skilful, it is unequal in its demands, it represses progress by taking away all stimulus to self-improvement, or to individual enterprise. It keeps society on a dead level, and fosters indolence and indifference. It will only be cured by a fair distribution of the services required in all grades of society, and by a commutation of the service for a fixed money payment.

In regard to legislation and general government, the queen is the head of all the tribes. On great questions, public meetings of the tribes (kabáries) are held, discussions take place, and the sovereign pronounces the decision. The sovereign in this way enacts all laws. But they are declared verbally by herself, or some appointed officer (as we saw in the Betsileo Province), in public meeting, and the people and their representatives respond. Judges and magistrates, "heads of hundreds," and so on, are appointed to hear cases and complaints, or to examine criminals: they sit in the open market. Many improvements are coming into these arrangements. The laws have been codified twice by recent sovereigns, and have been put in print. The Malagasy have now a "prime minister," a "commander-in-chief," and a "chief secretary of state," called by the English names. And these officers, with a few others, form a kind of Inner Council, who consult together about public affairs. Formal receptions are held by the court, and affairs are conducted with dignity and good sense.

Apart from their religious instructions, the missionaries of the London Missionary Society have done a great deal to enlarge the general knowledge of the people, and elevate their family and social life. They have given them new instruments for material progress, that have already secured valuable results. They first systematically wrote down the language in the Roman character; and both by learning to write and to employ the press, the government and the people have made abundant use of the new power placed at their command. Mr. Chick, with his huge anvil and muscular arms, astonished the people by the larger forms of iron work which he could produce. Radáma admired him greatly. The native smiths and artisans soon copied their master. Carpenters, builders, masons, and spinners have done the same. Perhaps the most striking improvement which has been accepted on a large scale, is the adoption of the English dress. It took place during our visit, in December,

1873. With the approval of the people, the queen expressed her readiness to receive her subjects at court, dressed in English costume. The transformation was rapid, and the demands made in all directions for hats, bonnets, feathers, sprigs of flowers, and ladies' jackets, was very great. Higher wants than these are being felt, and in due time they will, no doubt, be supplied. Of these, roads are an important item, and the payment for service in money. And it is a happy thing, that by improving and elevating the customs and institutions of the country on their old lines, the stability and safety of the nation are secured.

Things are yet very backward. But the Malagasy are an intelligent people, an orderly people, a loyal people, a religious people. They have learned much already, and they are improving daily. They are governed by a good queen, and by wise and able officers. Under such influences, secular and sacred, Hawaii, with its sixty thousand people, has grown into a Christian nation, and has taken its place in the world's history. Far greater will Madagascar at length become, when elevated, sanctified, and ennobled in all the elements of its social and public life.

Discussion.

Mr. Galton desired to ask a question of some psychological interest. It was stated, that in or about the year 1868 a dancing epidemic, like the Tarantella, and the other strange manias, which are so well described in Hecker's "Epidemics of the Middle Ages," had prevailed in Madagascar. It was also stated that the form and progress of the epidemic presented strict and curious analogies with the others to which he had referred. Could Dr. Mullens corroborate those statements?

Mr. Distant said, without professing any Malay scholarship, he could but notice another resemblance between the Malagasy and Malay languages besides that of an occasional identity of words. He alluded to the use of symbolical expressions, examples of which, as used in Madagascar, had been given by Dr. Mullens, and recalled many instances of the same kind in the Malay language—such as "Mata-ari," which, denoting the sun, literally meant the eye of the day. The dissimilarity, however, in character seemed very considerable. As we had learned from this paper, there is in the Malagasy character an inherent strength and capacity for what is understood as civilisation, which will enable that people to withstand the shock of introduction of institutions and ideas belonging to a race more advanced in organisation and knowledge. The reverse, however, he believed, applied to the Malays, who have one trait rather strongly marked—a love of money, without a capacity to acquire it. There is scarcely a Malay who could refuse the offer of a loan, even were he not in want of it, and he will mortgage his property, and pay enormous interest for the same. The usual results follow; and if

over the Malays are improved off the earth, "bill discounting" may, in those districts where some of the Chinese and Europeans have flourished, have proved an unobserved, but efficient agent.

Mr. J. Park Harrison thought it must be accepted as an anthropological fact that there was intercourse of some sort between Madagascar and the Indian Archipelago and Pacific, at a very early date. Dr. Mullens, however, whilst confirming the views of Ellis, Crawfurd, Oliver, and Pickering in this respect, differs from all these authorities in upholding a unity of race in the islanders. Distinctive features are daily becoming less conspicuous, and the earliest testimony is generally to be preferred. Not only, then, were there fair and dark islanders, but the lighter tribes are said to have been smaller in stature, and possessed of more perfect features than the others. One of the tribes used to plait the hair (which was black and glossy) in small knots, and manufactured wigs, like the dark races in Sumatra and some of the West Pacific Islands. Their funeral rites were also very similar. Drury, 150 years ago, relates that there were no priests amongst the people with whom he came in contact, but that it was the heads of families that killed animals in sacrifice. It seems probable that vessels of considerable size traded between Arabia and the South of Africa in remote times, and that Madagascar was mainly colonised from that direction. Dr. Pickering traced "Malay features," by actual inspection, from the shores of America (California), through the Pacific and East Indian Islands, to the immediate vicinity of Africa (Madagascar), and even found traces of them in southern Arabia and the borders of the Red Sea. Mr. Crawfurd thought it possible that some vessel, with Malays on board, was driven to Madagascar by the south-east monsoon, and that the people became incorporated with the islanders.

Dr. Mullens, in reply, offered the following brief explanations. The Malay word for "two" is *dua;* the Malagasy is *roa*. There may be a connection between the Malay and the Latin in this case, because the Malay language was considerably affected in its original seat by the visits of Hindoo navigators two and three thousand years ago. Many Sanskrit words were introduced into it from that source, but the connection is accidental.—The dancing mania, referred to by Mr. Galton, was a real thing. It occurred in the Central Provinces of Madagascar in 1863, and has been fully described by Dr. Davidson. It was connected with an attempted reaction by the heathen party in favour of idolatry, and was thought by the native Christians to spring from real demoniacal possessions. Dr. Davidson thinks it was not merely an hysterical and artificial epidemic; there was real disease connected with it; fear and imagination did much to spread it. Only the heathen party took the mania; none of the Christians suffered at all. A later revival of it was discouraged by the authorities, and threats of punishment had a powerful effect in bringing it to an end.—The captivity of Drury has many points of interest connected with it. Drury was cabin-boy in an English vessel that was wrecked on the south-west coast of Madagascar, near St. Augustin's Bay. Owing to misunder-

standings, the crew were massacred, but Drury, being young, was saved, and kept in slavery by one of the Sákaláva chiefs. He was in slavery seventeen years, and finally escaped in another vessel. On arriving in England, he published an account of his captivity, drawn from his recollections, and very simply related. We know all about the Sákaláva people, whom he describes. Their language is closely akin to what is usually called Malagasy. They are one of the three chief tribes; they are one of the darker tribes, and have always lived on the coast, in low and feverish districts. I have already spoken of them. M. Grandidier resided at Tolia, near St. Augustin's Bay, and will probably tell us much about it in his forthcoming work.

The Rev. Edgell Wyatt-Edgell and the President also joined in the discussion.

The following paper was read by the author:

On the Quissama Tribe *of* Angola. By J. J. Monteiro, Associate of the Royal School of Mines.

I first saw the Quissama tribe in 1859, and I have very often since been on the river Quanza, where for some years steam navigation with Loanda has existed, with the result of a large development of trade on that river and from the interior. The country of Quissama extends for a distance of about 120 miles on the southern bank of the Quanza, from its mouth to Dondo, beyond which place the Falls of Cambambe render it no longer navigable. Of the many tribes of negroes in Angola, that of the Quissamas is, perhaps, the lowest type of any, both physically and mentally. The Portuguese were first on the river about the year 1570, shortly after its discovery by them, and in 1595 they built the Fort at Muxima on the Quissama bank, the ruins of which still exist, and where they have a commandant and half-a-dozen soldiers. There is also here one of the oldest churches in Angola, containing an image of the Virgin Mary, which is greatly venerated, not only by the Quissamas, but by other natives even as far as Loanda. In former times the Portuguese missionaries had also several important stations on the northern bank of the Quanza, at Calumbo, Massangano, Cambambe, &c.; and although the missionaries ceased their labours years ago, the Portuguese have always existed on the river in greater or lesser numbers.

The natives of the northern bank, who speak the Bunda language, as at St. Paul de Loanda, prove to this day the good results of the great work of the former missionaries, being peaceable, and civilised to a considerable degree; mostly all speak Portuguese, and very many even read and write it.

Were not the Quissamas such an intractable race, the result of the former missionary teaching and civilisation would likewise be apparent in them; there can be no reason for supposing they were neglected, or not included in the labours of the missionaries, and it can only have been their great incapacity to receive instruction that has left them the savage and untamed tribe that we still find them, after 300 years of constant intercourse with the white race. When I say savage, I do not mean ferocious or warlike; they are the very reverse, being most cowardly and distrustful, and live in constant fear that the Portuguese or some native tribe will overrun their country and take possession of it. The Portuguese have never cared to occupy the Quissama country, or reduce the natives to subjection, as no object could be gained from it, the country, with the exception of a portion on the bank of the river from Massangano to Dondo, being so excessively arid and bare of water that the natives are obliged to make cisterns of hollow baobab trees, in which to store the water that falls in the rainy season. On the higher part of the river their country produces some palm oil, and the white traders at Dondo go, in the proper season, to the principal king of the Quissamas to settle the price at which it is to be bartered. The Libollos, or natives of the Libollo country adjoining the Quissamas to the east, are a very fine race, and although not so numerous as the Quissamas, have offered to fight the latter, and deliver their country to the Portuguese, if these will supply them with guns and ammunition. I was at Dondo when an embassy arrived from the Bailundo country to make an offer to the Portuguese to reduce the Quissama country if they were allowed to plunder, and carry off prisoners as slaves. This offer was refused, as nothing was to be gained by it. The Quissamas are a miserably poor and wretched tribe—are small, ugly, and excessively dirty in their persons and scanty clothing. The women wear only a kind of short skirt made of the inner bark of the baobab tree, and fastened round the loins (*see* fig., p. 200). This skirt seldom reaches right round the body, part of the thigh being left exposed. With use, the skirt splits up into a bundle of strings, and gets black with filth, perspiration, and grease. The two dresses exhibited, I had to order to be made, as it was impossible to keep any I could get second-hand. The women in walking or running give a peculiar rotary and up-and-down motion to these skirts, and, not satisfied with Nature's liberality, attempt to improve on her by the addition of several extra layers of fibre on that part of the skirt which falls behind. The larger dress is that of a full-grown woman, the smaller, one of a young woman, girls and children not wearing any clothing at all.

The men wear a waistcloth of fine native matting, or of cotton cloth obtained in barter from the traders. These cloths are generally dyed a dirty black by being soaked in the juice of a wild indigo plant, mixed with a black ferruginous mud from the river. The women use large, open, conical baskets, with a flat side to fit the back and suspend by a band round the forehead, in which they carry produce, &c. (*See* fig.) It is the only tribe anywhere in Angola or on the West Coast that I know to use baskets in this fashion. The Quissama women, like those of

This illustration represents Quissama women pounding mandioca roots into meal in a wooden mortar, and sifting it through a kind of bottle-shaped sieve into an open basket. To the left is a woman carrying a basket on her back and a hoe in her hand.*

other tribes, cultivate the ground, and grow mandioca root, beans, and Indian corn; but their principal food is a small fish called "cacusso," which is very abundant in the river and lagoons, and which they catch with cast net and in fish baskets made like our eel traps. The Quissamas have no cattle, and but few sheep, goats, or fowls. They collect wax from hives they keep in the branches of trees, especially the baobab tree. With this, and palm oil, fish, &c., they constantly cross over to sell or barter to the white traders and the more civilised natives on the north bank; but they are such a suspicious and distrustful race that they never delay longer than necessary, and always return before nightfall, although they have never been ill-treated, nor have they any reason for fear of any kind. The Quissamas are not cannibals, nor do the women ascend the palm trees to collect the juice or wine, which everywhere in Angola is man's

* The wood block for this engraving, from Mr. Monteiro's forthcoming work on "Angola and the River Congo," has been kindly lent by the publishers, Messrs. Macmillan & Co.

work. They will not allow whites or blacks to open stores for trade in their country, nor will they deliver up slaves who run away into their country from their masters on the north bank. Formerly thousands of slaves passed through the Quissama country from Massangano to Benguella Velha, where they were shipped by the Spanish and Portuguese slave dealers, and I knew several Portuguese who, in other times, had often accompanied caravans of slaves through the Quissama country, and who described it to me.

To the south of Muxima there is a salt mine that I believe has never been visited by a white man, and the Quissamas cut the rock-salt in small, long, polygonal blocks about the size of a thin scythe-stone, and pointed slightly at the ends. These are closely enveloped in flat cane work, and when I first was on the river in 1859, were much used as money amongst the natives. They are now scarce; but the most singular circumstance connected with them is, that the newspaper correspondents accompanying the Abyssinian expedition described exactly the same kind of salt blocks as passing as money in the interior of that country. A little above Muxima there is a high cliff overhanging the river, called the "Fetish Rock," and from which their criminals, and those condemned to death for witchcraft, are thrown into the river. They are said to be previously stunned by a blow on the head, that they shall not escape being devoured by the alligators that swarm in that beautiful river.

Mr. Moggridge, by permission of the President, spoke on the destruction of the New Forest. The meeting then separated.

May 11th, 1875.

Colonel A. Lane Fox, *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The election was announced of Samuel Davey, Esq., of Monkswell, Windmore Road, Bromley, Kent.

Thanks were voted for the following list of presents:—

For the Library.

From the Society of Arts and Sciences, Batavia.—Tijdschrift, Vol. XXI. Nos. 3 and 4; Vol. XXII. Nos. 1—3. Notulen, Vol. XXII. Nos. 1—3, 1874.

From the Canadian Institute.—The Canadian Journal, Vol. XIV. No. 4.

From the SOCIETY.—Proceedings of the Royal Society, Vol. XXIII. No. 160.
From the SWEDISH AND NORWEGIAN LEGATION.—Official Statistics from the Royal University of Christiania.
From the ASSOCIATION.—Transactions of the Social Science Association, 1874, Glasgow.
From the SOCIETY.—Annuario della Società dei Naturalisti in Modena.
From the ASSOCIATION.—Journal of the Royal Historical and Archæological Association of Ireland, No. 20, 1874.
From the SOCIETY.—Proceedings of the Royal Geographical Society, Vol. XIX. No. 4.
From the ASSOCIATION.—Proc. of Geologists' Assoc., Vol. IV. No. 2.
From JAMES BURNS, Esq.—Human Nature, for May, 1875.
From the EDITOR.—Revue Scientifique, Nos. 44 and 45, 1875.
From the AUTHOR.—What am I? By E. W. Cox. Heredity and Hybridism. By E. W. Cox.
From the EDITOR.—Nature (to date).

The following paper was read by the author:

On MYTHOLOGY. By MONCURE D. CONWAY.

THE subject upon which I have to submit some statement this evening being a very large one, it may, perhaps, be well enough to say that in no case could I have aspired to deal with it comprehensively; and as, in view of the interesting subject which is to succeed, I shall endeavour to condense what I have to say into as short a time as possible, I fear that some points that I desire to make have the appearance of generalisations, insufficiently supported by facts. I beg only to say that, in each such case, the facts and authorities are much less limited than the moments I can venture to occupy.

First of all we are met by the problem of the evolution of deities, and of the myths with which they are invested. In this direction, the study of comparative mythology tends to correct an impression to which most persons have a bias, and which the analogy of physical evolution at first glance appears to confirm. From early life we have impressed upon us the gross and grovelling character of the objects worshipped in what are called Pagan lands, the stocks and stones, animals and trees, of their idolatry being themes of religious horror. The ordinary process of evolution from lower to higher might suggest that human worship originated in the adoration of such base objects, and gradually ascended to grander objects—such as the elements and the heavens—just as man begins with a flint flake, and ends with a Sheffield knife. There is reason to believe that religious evolution has been the reverse of this, that it begins in the

terror, awe, and admiration awakened by the splendours and the vaster powers of nature—chiefly by the phenomena of the heavens and the play of the elements—and that it was only gradually that certain small earthly objects came to be held sacred, and then only by association with the grander objects. It is doubtful whether any savage ever worshipped the stock or stone in itself, and certain, that if he did so, it was only because the origin of its sanctity had been lost. In zoological mythology, the sacred animals are connected each with some deity. For instance, the little red beetle, called in India *Indragopas* (protected by Indra), is honoured as the little cow of God in Russia, St. Lucia in Tuscany, St. Michael's chicken in Piedmont; in Germany, little bird of God, little bird of the sun, little cock of Mary, and so comes to be our lady's bird, or ladybird, in England. The sanctity of the Egyptian Scarabæus was, no doubt, just as high in origin. The sanctity of flowers, weeds, bushes, trees, of which I have collected many hundreds, bears either in their names, or the fables associated with them, traces of a like origin, as symbols or oracles of higher things. Many of them have passed from religion to religion, bearing a mystical significance: as the toolsee, worshipped in India; a magical plant in German lore, as Sweet Basil; and our common St. John's Wort (*Hypericum Androsæmum*—*ανδρος αιμα*—blood of man), and whose red juice symbolised the blood of the slain Baldur, declined among newly Christianised peasants to "elf-blood," then rose to represent the blood of the beheaded John, under the name of St. John's Wort, the famous charm against witches. So also the flowers named after the Madonna—as lady's glove, lady's slipper—once bore Freyja's name. It may be noticed that whenever plants in remote districts are gathered for magical potency, as charms or medicines, it was essential that they should be gathered at certain holy times of the year, or under a particular phase of the moon, these being survivals of their ancient connection with celestial phenomena.

We may, then, conclude that religion has the high origin indicated. As the palæontologist knows how near to each other may be forms which have widely different functions—how easy, for instance, it is to confuse the bone of an extinct reptile that crept in the mud with that of a bird which soared in the air—so the student of mythology has to learn that phenomena, widely different in manifestation, may belong to one species. Sun-worship and serpent-worship, for example, cling together as closely now in Dahomey, where snake-worship is allied with the fire ordeal, as of old in Egypt, where they combined to form the symbol of the snake-winged sphere.

Another principle of importance which comparative mythology

appears to verify, is, that the original worship of mankind did not refer, or only gradually referred, to the moral qualities of the powers they worshipped. The phenomena, when personified, possessed the mixed character of the facts and forces of nature, part good, part evil, benevolent or malevolent, according to their mood, or as they were offended or soothed.

In the Rig Veda, the Marüts, or Storm Gods, are called the "allies" of Indra. The Hebrew Yahve says, "I create light, and I create darkness; I create good, and I create evil." We do not meet with any devil in the earliest mythology, and this plainly because no devil was needed. The deities were quite equal to any evil-doings that had to be accounted for. Even after the work of detaching the benevolent from the malevolent forces had progressed far, we meet for a long time only with demons—not with a devil, or a being who is wicked simply from love of wickedness. The demons—whether dragons, genii, or what not—have a motive. They are personifications of hunger, thirst, burning heat, intense cold, disease. Each of these is detached from a deity, or an *Abgott* (ex-God) as the Germans say, and they often bear traces of the estate from which they have fallen, either in their names—as Lucifer, Belial, Loki, names of light—or in the lameness received by their fall from heaven.

Mythology is thus a sort of banyan growth; its branches grow from above and take root in the earth. To explain its forms we must generally look above them rather than beneath. Let me dwell for a moment on an instance in which, as I think, neglect of the principles stated have led to error. We have heard a good deal of the Devil-worshippers, or Yzedis, who are supposed to worship a devil exclusively on the principle that he alone can have any disposition to do them harm, or can require to be propitiated. The probability is that the Mussulman calls the Yzedi a devil-worshipper only as the Zoroastrian held the worshipper of a deva to be the same—*deva* meaning, to the Zoroastrian, *devil*, to the Hindoo, *deity*. The chief object of reverence to the Yzedi is the *Taous*, a mythical peacock. Prof. King, of Cambridge, has traced the *Taous* of this Assyrian sect to the phœnix described by Herodotus (ii. 73) as burning itself on the altar of the sun in Heliopolis every hundred years, that another might rise from its ashes. Now the name Yzedis is simply genii, and we are thus pointed to ancient Arabia, where we find the mythical bird *Rokh*. There also we find Mohammed denouncing a popular belief in a bird called Hamâh, which was said to take form from a drop of blood in the brain of a dead person, and fly away—to return, however, at the end of every century, to visit that person's tomb. It would appear, then, that

devil-worship has been foisted on these people as an epithet that their belief represents an early form of animism and the doctrine of immortality; and though they may now accept the epithet—as the Friends consent to be called "Quakers"—they represent no such thing as the worship of Satan. How strong the old phœnix or *Taous* myth is, even among the Mussulmans themselves, may sometimes be detected by an observant traveller,—like Dr. Leitner, for instance, who found this peacock-shaped lamp in a mosque, where it ought not to have been, after the curses Mohammed heaped upon the form.

In one sense, Mythology is a kind of "fossil poetry"—to remember a phrase which Emerson applied to language. Any one who reads the Vedas or the Avesta will recognise in their imaginative phase the forms which in later periods hardened from ideals to idols. When the various colours of Dawn are compared to steeds, or clouds to cows or dragons, in the early books there is a lack of any such precision as is indicated in a mythology. The metaphors shift and change, they are applied now to one, now to another phenomenon; and it must have been in an age which invested such utterances with literal inspiration and verbal infallibility that the luxuriant growths were petrified into the material of mythology. I say the material, because the poet has to step in again, and again invest with ideality the rigid form which his ancient brother's metaphor has assumed in popular superstition. As Indra (the sun) with his steeds of light reappear as Apollo with his chariot and horses; as he, the divine slayer of the serpent Ahi, returns again as slayer of the Python; we note that things vague in the earlier have become clear cut, so to say, in the later form of the myth. We know various details about the Python which we do not know about Vritra or Ahi, the monsters whom Indra slew, the incidents of the combat, and there is now a woman in the case. The whole thing has alighted out of cloudland. It is not only more realistic, but more complex, various other myths having blended with it. It is difficult to weigh the various forces which operated to bring about such results as this, which are numerous; but chief among them we may discover political and ethnical influence. It is pretty clear that certain groups of deities, like the triad of Egypt and that of India, were brought about by the amalgamation of provinces, the equality of their chief deities being a condition of their national unity. The union of states may be represented, too, in the intermarriage of gods and goddesses. Myths grow also through religious rivalries. The priest no sooner hears of a big story told about a rival deity than he plagiarises it to add lustre to his own deity. Thus in the case of Apollo: he seems to have been originally a local divinity of the

shepherds of Arcadia, and was raised in importance by the Dorians when they conquered the Peloponnesus. However, during the opening of communications with Egypt, all the characteristics of Horus were added to him. The glories of Helios were transferred to him. We can see, nearer home, how such a force as this operates in the transfer to the Madonna of the stories which European pagans once told about their goddesses Bertha and Freyja, and in the inheritance by Saint George, Saint Michael, and other saints, of the dragon-slaying renown of Oriental deities. The material being thus quarried in many regions and brought together, the poet would again step in to build them up into the architectural symmetry and beauty which are so striking in mythologies. For the larger part of their immortality the gods and goddesses are indebted to the singers of the Vedas, of the Eddas, to Homer and Hesiod. In their poems we see, as an array of bright and beautiful forms, what, to the ignorant of their time, were probably rude and coarse idols. There is no limit to the power of poetry. Let theology give him a snake to work upon—a mere poisonous reptile, held in awe because of the deadly and mysterious danger which he seems entrusted to bear, and which must be propitiated—and the poet will detect in the reptile an occult symbolism. His coil is the circle of eternity; his spots correspond with the stars; his passing from skin to skin is the renewal of youth; his motion without legs the persistaltic movement of the universe; his forked tongue is inherited from the forked lightning. If this is the accumulation of poetic touches, resulting in the sanctity of the serpent, which sends it to support Vishnu in his starry repose, or whisper wisdom to Esculapius, to Athena, or to Eve, we need not wonder at the splendour of the ideals which priests have always been pulling down from the clouds to do ecclesiastical duty on earth, and which poets have always been raising up again, to shine with their original radiance.

My general statement of the genesis and evolution of mythology then is, that it begins in the higher phenomena of nature as they affect the human imagination;—not always in the sun, whence some seem to derive every myth, but from sun, night, eclipse, cloud, star, lightning, tempest—all high and wonderful things; that expression in human language begins their association with earthly objects, so that the rain-distilling cloud is called a milk-distilling cow, and so on; that fear, theology, the priest, harden the metaphors into a religious machinery; and that when this machinery begins to wear out, or more efficient machinery is invented, poetry and art take up the old forms, and re-translate them into mythology, or final apotheosis.

It follows, then, that every mythology represents the wreck of a religion. But while, whenever an ancient system which had been associated with the moral and social life of a people goes to pieces, it is only in such literary and artistic form that it is preserved as a whole; there is a popular form in which its various fragments survive, and they are scattered through the world as popular superstitions and folk-lore. I do not mean to go far into the large subjects of survivals, but may, in conclusion, note the persistence of religious fables as among the best aids we possess for the recovery of the unwritten history of primitive man. It is almost a compensation for the evils of superstition, that in its notion of the preternatural potency of certain phrases, runic rhymes, and its sense of the importance of exactness in transmitting details, it has given to innumerable fables a hardness and stamp quite as enduring as an arrow-head. True it is, that detached from the great system to which they belonged, subjected, in the ebb and flow of time, to the friction that wears away their outline, these fragments from alien formations require careful scrutiny in order to locate them rightly. For instance, when an English boy in the country greets the fall of snow with the cry, "Mother Hubbard picking her geese," or the more orthodox German lad cries, "Mother Holla shakes out her feather-bed," we arrive easily at a survival of the ancient German belief in Holla, or Huldah, goddess of housewives. But this goddess had various names, and the chief one was Bertha, more anciently Berchta, or Perchta, which may be related to πυρ (fire). This goddess, the shining one, inherited the swan fables from the East. The light, fleecy clouds floating in the sky, apparently around the sun, were described in early Eastern poetry as swans, and in the end as attendant nymphs. Thus in the "Dhaurmapada" it is said: "The swans go on the path of the sun; they go through the ether by their miraculous power." By a process which may easily be imagined, it became a belief that these celestial swan-nymphs sometimes appeared in the disguise of human beings; but they might occasionally be detected through some little feature resembling a swan. Out of this grew a species of legend, which may be found given in a popular form in Buddhagosha's parables, where the virtue of modesty, and the wisdom of looking beyond appearances, are impressed through the story of a king of Benares, Likkhavi by name, who became enamoured of an humble village girl, because, as he observed her from his window, he noticed some little instance of her scrupulous modesty. She was quite homely, and, especially, she had large hands. Yet the king married her, and she bore him a son, who became famous for his wisdom and greatness. The large

hands correspond with the large feet of Bertha, and both refer to the webbed foot of the swan. The story of Queen Bertha came to her, probably, as an inheritance from the swan-attended goddess, simply because of her name. After all her sad adventures, King Pepin meets her in the Bavarian forest, where he is hunting. She has been reduced to become a servant in a miller's house, where the king stops. She is called "Bertha of the big foot." The king marries her, and their first son was the great Charlemagne. There are one or two representatives of this queen in Europe displaying a distinctly webbed foot. Connected with the same myth is the proverbial rustic saying in Germany, concerning any woman supposed to be a witch, "She has yellow slippers"—the allusion being to the yellow feet of the swan. And this phrase, the rune about picking geese or shaking out feather-beds by Mother Huldah when it snows; perhaps, too, our Michaelmas goose; certainly the big or webbed foot of Charlemagne's mother—the swan-legends scattered throughout the great drift of European folk-lore, including that graceful swan now drawing the chariot of Lohengrin at Covent Garden, may be traced back to the myth of "Circe and the Syrens," "Zeus and Leda;" these in turn being only the forms in which superstition first, and finally art and poetry, preserved what originally were Vedic hymns, in which Agni and the Maruts, the fiery and the dark clouds, were compared to swans floating on the sea of azure.

The method of studying mythology, however difficult in its application, is in itself simple. The fable is out of its place when it is inexplicable by the environment where it is found. We have to try and fit it in here and there until we find a formation which completely explains it. A striking instance of the impossibility of understanding a myth out of its place is supplied by the long puzzle about the serpent in Eden, transmitted from ancient Rabbins to modern theologians. The curse on the serpent, that it should always crawl in the dust—as if that had not been its nature previously—has been dealt with in various speculations; from the Rabbins, who said that the animal was previously shaped like a camel, to Dr. Adam Clarke, who thought it may have been a monkey; and recently, Mr. Fergusson, who explains the curse as an anathema on serpent worshippers. But the whole story of Eden, the tree of immortality, the serpent and its wisdom, is inexplicable by any Shemitic analogues. It is a boulder which has floated away from the great Aryan rocks. It is in India that we find the tree of life in the Meru paradise, the effort of the serpents to obtain the ambrosia of the gods—that great episode of the Mahâbhârata—the transformations of demons or rival deities

into serpents, and their consequent supernatural wisdom; it is in India that we find all this class of myths. It is in Persia, Greece, Scandinavia, Germany, that we find their manifold modifications; they are the common currency of the Aryan race. The curse on the serpent, that it should crawl on its belly in the dust, has a very simple meaning for a race that believed in transmigration—that every animal form contained a soul on its way to higher forms, to whom the most terrible doom would be nailed for ever to one low form, and to the dust. There are various reasons for believing the Hebrew book containing this story, though printed first, to be comparatively a late one in its present form; and we may feel assured that such a narrative as that to which I have alluded could not have been there given, except after the Jewish race had become familiar with Aryan races. The unexpectedness of the place in which the legend is found, and the unquestionably Aryan character of each broken bit which has been thus pieced into a consistent story—which is as foreign to its place as a mosque would be in Trafalgar Square—combine, as I think, to illustrate the method which comparative mythology must employ, and the kind of certainty that can alone be considered satisfactory.

In a certain sense a myth is immortal; but its immortality, like that of Zithonos, is unaccompanied by the gift of perpetual youth; and as Zithonos, shrivelled with age, was, in compassion, changed to a grasshopper, even so it is, in the small forms of popular traditions, that the once majestic ideals of the world chirp around us. But their chirping is still the voice of nature, and their withered form still tinted with the hues of earth and sky. The student of mythology, as he reads in his paper the casual paragraph headed "Singular superstition," recognises in it the epitaph of some religion which once swayed the hearts of millions, and guided the destinies of empires.

Discussion.

Mr. Bouverie Pusey said, in reference to Mr. Conway's remarks on the Yzedis, that the account of their origin in Kremer's "Geschichte der herrschenden Ideen des Islamis," seemed to him to be historically exact. From it he gathered that the Yzedis were founded by Sheikh Adi, a teacher belonging to the mystical sect of the Sufis, pantheists who believed, like Goethe and Emerson, that everything is a part or emanation of God, and, therefore, good. The devil, therefore, is good, being an emanation from God, and it is wrong to say, "Cursed be Satan," as the Mussulmans say when a horse casts a shoe, or any other misfortune happens. This point of Sheikh Adi's teaching naturally impressed the populace of both sides, and the two or three Kurdish tribes who adopted his doctrine were considered personal friends and worshippers of Satan.

Mr. J. JEREMIAH said that he quite agreed with Dr. G. W. Leitner, when he said that mythology is not made of the "wrecks of religion," but that religion sprung into *activity* coeval with the origin of mythology. The speaker thought that in the study of comparative mythology we should arrive at something like a satisfactory position if we carefully examined the details of local mythologies. For instance, we have a few facts in connection with what may be called Keltic Mythology that must not be disregarded, although there is a feeling abroad that the Keltic lore of the country, and especially of Wales, is comparatively worthless. To show how important the study of Welsh myths is, Mr. Conway referred to the beautiful legend of the Swan in the opera of *Lohengrin*, and mentioned its vanishing from view after doing service to mankind. The speaker understood him to say that the *vanishing* of the swan is found in the legends of India, stamping it as Aryan. Well, singular to say, the *vanishing* of the subject of legend occurs in the charming Welsh legend of the *Milk-White Milch Cow*, which relates that the milk-white milch cow gave enough milk to every one who desired it. The persons who drank her milk were healed of every illness, fools became wise, the wicked became happy. This cow went round the world, conferring benefit upon mankind. After traversing through the Island of Britain, she reached the Vale of Towy, in Caermarthenshire, where, tempted by her fine appearance and condition, the natives sought to kill and eat her; but, just as they were proceeding to effect their purpose, she *vanished* from between their hands, and was never seen again. The question, then, to bear in mind, is not so much in relation to the *swan* exclusively, but from whence did the *vanishing* of animals and human beings spring—in the homes of the Aryans or the pre-Aryans? Mr. Conway had also alluded to the winds of heaven occupying a prominent place in Aryan mythology. In the Welsh mythology, we find that the wind is curiously treated. The milky-way has *eleven* names in Welsh, with very interesting and puzzling legends attached to some of these. He should not trouble the meeting with an enumeration of them; but as regards the "wind," two of the names are *Llwybr-y-gwynt* (the track of the wind), and *Heol-y-gwynt* (the road of the wind). It is said, and believed in in some parts of Wales, that the observed path of the milky-way on any given night indicates that the wind will blow in that direction the following day. But in Hampshire they say, the wind will blow at *right angles* to that path. Here is the difficulty—which is the older, the Welsh or Southern English? As the Scandinavians called the "way" the "Road of Winter," he was inclined to ascribe its greater antiquity to the Welsh, as the Northerners are known to have made incursions into South Wales, and it is in that part of the country he found the tradition more prevalent than in North Wales. Yet it may not be purely Keltic, but a development of the Scandinavian idea, although the Irish have no wind legend in connection with the milky-way. They call it *Bothar-bo-finn*, the road of the White Cow, or, the road of the Finn's Cow. There is no other name in Irish than this. Assuming the Gaelic to

be a purer form of the Keltic than Welsh, our study of the legends of Finn, white cows and oxen, &c., will result, he felt sure, to the advantage of comparative mythology. What is worth remarking is, that the Irish do not look upon the milky-way as a *weather prognostic.*

Mr. Hyde Clarke observed that an Aryan origin is quite inadequate to account for the mythological phenomena cited, which evidently belong to antecedent epochs. The astronomical phenomena referred to by Mr. Luke Burke and Mr. Haliburton were known in the prehistoric epochs, as is proved by the wide distribution of legends in relation to them. One key is that proposed by Mr. Haliburton, and which opens out much of the symbolism. Thus in the middle of November is the following conjunction :—

Pleiades 7

Bull 5

Orion 3

Dog Star 1

This is the period of the new year, and of the feast of the dead of many nations, and is, undoubtedly, connected with one system of a prehistoric and existing calendar. There is consequently a mysterious series of 7, 5, 3, and 1. The stars in the Pleiades form a kind of cross, which is related to the Tau. This is connected with the T-marking of the wings of the Scarabeus, and which myth is represented in the ladybird, quoted by Mr. Conway. The series of the Pleiades also contains a 3, Triad, or Trinity, of the sacredness of which number it perhaps affords the origin. Mr. Conway's suggestion, that a Trinity represents always an alliance of national gods, cannot represent the general law, because some trinities consist of associated objects, and where a trinity is personified, besides a male and a female there is generally a chief god, who may be a generator, and thereby unites both sexes. At all events, mythology is a continuous development, although from time it has acquired special national types. With regard to the alleged devil-worship of the Yzedis, they certainly treat Sheitan as Melek Taous (King Peacock), and avoid the common references to Sheitan.

Mr. Conway thought that the comments which had been made on his paper were not such as to require any extended reply. He was, indeed, disposed to welcome the contributions to the subject which had been made by various speakers. With reference to the explanation of the so-called devil-worship of the Yzedis which had been offered by Mr. Pusey, he could not but suspect

that their optimism is referable to the later and rationalising phase of the religion, and that the worship of the "Taous," so plainly related to the "phœnix" of Herodotus, belonged to the earlier and pre-theological phase. He (Mr. Conway) could also agree to the geological illustration of mythology which had been used by one of the speakers, but thought that mythologies themselves, in their completed forms, must be regarded as the later strata of religions. A Greek writer, whom we may regard as a religious conservative, had contemplated with satisfaction the tortures which he believed the poet Hesiod was undergoing in the realm of Hades for the stories he had related about the gods. Our Greek mythology, in its present condition, comes mainly, perhaps, from Hesiod, and we may feel pretty sure that the poet would not have been able to make so free with the gods until they had begun to fade out of popular belief. Mythology is a dramatic expression of religion, and gods and godesses are dramatised only when they have ceased to be formidable realities to the popular faith.

Mr. Brabrook read the following paper for the author:

Language *and* Race. By Rev. A. H. Sayce, M.A.

The fallacy that language is a sure and certain test of race is one to which few comparative philologists would nowadays commit themselves. There is no assertion which can be more readily confronted with history, or, when so confronted, more clearly be demonstrated to be false. Language is no physiological necessity; it is not one of those physical marks which characterise race, and, like the colour of the skin or the shape of the skull, are inseparable from a man. We cannot help having hair of a particular character, or even, perhaps, a disposition of a particular kind, but we *can* help having language. A man may never speak all his life through, may never have the opportunity of speaking, but he will none the less be a man. We can easily conceive of a race of deaf-mutes who never make use of language in the ordinary sense of the word; indeed, the opinion is gaining ground among the students of philology that all articulate language has originated out of a previous gesture-language, which, of course, is the same all the world over, and could constitute no *differentia* of race. But, though language is no mark of race, it *is* a mark of society. Even the most rudimentary society could not exist without it; certainly no civilised society could do so. It is social in its origin and nature, the creation and mirror of society, as well as the bond that keeps society together. Had men always led isolated lives, any means of communication with one another would have been unnecessary, and language need never have been elaborated. Just as writing was invented for the wants of a civilised society, so we

may say that language was invented for the wants of an uncivilised society. The power of articulate speech was possessed by man, like the power of making laws, or of mathematical reasoning; but had it not been for social requirements it would have lain dormant, without a motive for calling it forth and using it as an instrument of intercommunication. In short, society implies language, race does not; and hence, while we may lay down that language is the test of social contact, we may lay down with equal precision that it is not a test of race.

This conclusion is borne out by a survey of the facts. The language we speak is not implanted in us at our birth. The child has painfully and slowly to learn his native tongue, though, doubtless, he inherits a certain aptitude for doing so. If he is born in England, it is English that he learns; if in France, French. If two or more languages are spoken by those about him, he is likely to acquire these languages more or less perfectly, according to the degree in which he comes into social contact with those who speak them. Languages, once well known, can be entirely forgotten, and foreign ones can become as familiar as though they were native. Children whose language was Hindustani have forgotten it utterly after a short residence in England, and it is often difficult to reproduce a sound which was constantly on the lips in childhood.

What holds good of the individual holds equally good of the community, which is composed of individuals. Here, also, the language spoken depends upon the influences surrounding the community. Whatever breaks up, amalgamates, or mixes the community, has the same effect upon the language it speaks. The community must be carefully distinguished from the race. The same race may be divided into a multitude of communities, each separate and independent, and with characteristics of its own. Indeed, except under the unifying pressure of a centralised civilisation, such independent communities *must* exist in every race, and the variety and unlikeness of the communities will be reproduced in the variety and unlikeness of their languages or dialects. The diversity of manners and customs will not be so great as the diversity of speech, since the speech is a reflection of the whole body of manners and customs, past and present, in each society. The infinitely numerous societies that have existed during the long period that man has been upon the earth, imply an equal number of forms of speech; and as these societies have been continually influencing one another, destroying, absorbing, modifying, and invigorating, the languages or dialects which they represent will have been in a corresponding state of flux. Indeed, the languages will have been affected even more than the societies themselves. A

society may continue to exist, thanks to its customs or the influences of race, while the language it spoke has disappeared, through the daily need of communication with other and more powerful societies. Thus Jewish societies exist all the world over, as separate societies with peculiar rites and customs, and apart from any question of race; and yet their language is, for the most part, that of the people among whom they are settled. The Jews of southern Austria are emigrants from Spain, and believe that old Spanish is their sacred tongue; and the Jews of Abyssinia, of China, and elsewhere, speak the dialect of the country in which they live. This is a strong case, as the disappearance of a language generally implies the disappearance of a community as a separate society. But it sets in a very clear light the fact that language is a test of social contact. Looking merely at the rites and customs of the Jewish communities, we should have no idea of the vicissitudes they have experienced, and the unallied societies which surrounded them. It is not until we come to the language that this is made plain; and so good a register of social influences is the language, that even without the aid of history we could have discovered the Spanish origin of the South Austrian Jews.

Now there are not many examples of so pure-blooded a race as the Jews, in the civilised world at any rate. Even among savages and barbarians, purity of descent is likely to be the exception, rather than the rule. Considering the antiquity of mankind, and the history of modern savage tribes, which are constantly at war with one another, or intermarrying into other clans, making wives of the slaves they capture, races as well as societies are probably somewhat mixed. In most cases, however, the type remains fixed and unmistakeable; but the mere possibility of mixture—that is, of close intercourse with another society—makes it impossible for language to be a criterion of race. We cannot tell whether the same event that has befallen the Jews has not befallen other races also, and that they have not been brought into such intimate connection with a foreign language (though, as with the Jews, not necessarily through the medium of marriage) as to have adopted it for their own. Keltic is extinct among the Kelts of Cornwall and the Isle of Man, and the same fate seems to threaten the other Keltic dialects of Great Britain and France. Slavonic has similarly disappeared fram Prussia, and Basque alone is left of the pre-Keltic languages of Western Europe. Keltic itself had to make way for Latin in Gaul and Spain, like Punic in Africa; and the Normans first lost their mother tongue in Normandy, and then their new tongue in England. The Scandinavian colonies which existed in Greenland for 500 years left no traces behind

them, and Arabic in Sicily, and Visigothic in Spain, have been totally extirpated. The Melanesians and Papuans belong to different races and yet speak the same languages, and the same may be the case with the Finns and Lapps. A few inscriptions of doubtful meaning are all that is left of the Etruscan language. The race that spoke it was numerous and powerful; it was a language of literature and culture, and struggled successfully against Roman encroachment down to a late period; but the fragments of it that remain have been vainly compared with languages dead and living, possible and impossible, and I believe it to be the last waif and stray of an extinct family of speech. According to Humboldt and Bonpland, "a million of the Aborigines of America have exchanged their native for an European language." The inhabitants of S. Salvador, Nicaragua, Costa Rica, S. Margaretha, Baradéro, Quilmos, Calchaguy, and Chiloe, have exchanged their own idioms for Spanish, the inhabitants of Rio Janeiro for Portuguese. The negroes of Hayti have adopted French; while the soldiers sent by the Sultan Selim into lower Nubia in 1420 soon lost their mother-tongue. "Before the Christian era," as I have remarked in my "Principles of Comparative Philology," when dealing with this subject, "Hebrew, Assyrian, and Babylonian had been supplanted by Aramaic, which was fast tending to become the common dialect of the Semitic world, like Arabic in later times." The ancient agglutinative Accadian of Chaldea, in which a large and influential literature was written, and the first elements of Asiatic civilisation comprised, was so completely rooted out by the conquering Semites, that the very existence of the language was unknown till the last few years. And yet so important was it as to become the Latin of the educated Assyrian, whose science and art were locked up in this dead tongue, while members of the ancient race must have continued to exist in Babylonia after the extinction of their language.

These facts are more than sufficient to show that language is a test of social contact and not of race. But they do more than this. They show, on the one hand, that language is the best evidence of social contact we can have (as in the case of the Jews); but, on the other hand, that it does not prove a negative. Where there are traces of two or more languages in the same language, or where two distinct races have the same tongue, we can infer with absolute certainty that there has been social contact; but where such traces are not to be found, we are not justified in inferring that there has been no social contact. The instance of the Scandinavians in Greenland is a good warning. As regards race, language will tell us nothing. It does not even raise a presumption that the speakers of the same language are

all of the same origin. We have only to look at the great states of Europe, with their mingled races and common dialect, to discover this. Language shows only that they have all come under the same social influences. Race in philology, and race in physiology, mean very different things. When we find local names, which must be explained by another language than that at present existing in a country, we can only infer a difference of society, not of race. No doubt, identity of social relations may imply—and often does imply—identity of race; but to learn this we must go elsewhere than to language. Language tells us what the social relations have been; from these, other data and other sciences may enable us to argue to the race. In weighing the evidence, two points have to be borne in mind: one is, that civilisation tends to unity, combining and centralising diversified societies, languages, and customs; and the other is, that savage societies are in a constant state of flux. In an uncultivated age, therefore, we have to deal more with *dialects*, in a civilised age with *languages*. The first philologist who demonstrated the untenability of the assumption that language and race are correlative terms was the Rev. G. C. Geldart, in a Paper called "Language no test of Race," read before the British Association at Leeds in 1857. He treated the subject from the four points of (1) military, (2) religious, (3) intellectual, and (4) fashionable intercourse.

Discussion.

Professor Whitney said, that he had little to do except to express his entire accordance with the author of the paper in all main points. There can be no real question that, as Mr. Sayce claims, language does not prove race. The truth of the matter may perhaps be best summed up in the statement, that the language which a man speaks is not determined by any peculiarity in his structure, physical or mental, but by his education; one's language is learned, not made by him. This is shown both by an abundance of special facts in the history of language (Mr. Sayce has quoted some of those currently used, while adding other interesting ones), and by a sound theory of language, as deduced from the totality of its history. The "linguistic faculty" with which men are gifted does not put any given language into their possession; it puts, rather, any and every language within their grasp. There is no dialect on the earth which any human being may not acquire, and use successfully for the satisfaction of the ordinary ends of speech; his peculiarities of race-endowment, as of individual endowment, may show themselves in the kind and degree of his mastery of the given dialect, but they do not guide him, or even point him, to the attainment of one dialect rather than another. The same "linguistic faculty" makes every man as capable of producing any given dialect

as have been some of those who have actually produced it. For every language is a historical product, wrought out in each race or continuous community by the gradual operation of the general human faculty or capacity of speech, working under the constant government of the special capacities and circumstances of that particular race or community. Every generation, in any community, receives, by a process of teaching and learning, what its predecessors have wrought out, and makes its own comparatively slight additions and modifications. A language thus goes down by tradition within certain geographical limits. It is virtually an institution, a part of the acquired culture of the people to whom it belongs; and, like every other part of culture, it is capable of transference. It may be abandoned by individuals of the race that produced it, or even by the whole race; it may be acquired by individuals, or even whole communities or races, which had nothing to do with its production. That, for example, a man of African ancestry learns a European tongue, is precisely parallel with his learning to make and use European houses and clothes—with his acquiring European habits, and opinions, and knowledge. It appears clearly from this how entirely a language is divorced from necessary connection with a race; and any estimate of the bearing of linguistics on ethnology which does not take due account of this nature of the relation between them, must lead to erroneous results. The testimony of language to race is simply that of an institution, inheritable, but also exchangeable. At the same time—as Mr. Sayce, in his paper, might well enough have more strongly insisted—there remains, in the actual condition of things in the world, an immense value to language, if not as the absolute proof, yet as the acceptable and trustworthy indication of race. And this from the simple fact that, after all, those from whom a human being learns to speak are usually his parents, and others related in blood with them. And this especially in regions and in periods where the evidence of language is most needed—among uncivilised races and in primitive times. Civilisation facilitates intermixture; and it is only civilisation and literary culture that give to any language the power to extend itself widely beyond its natural race-limits. Except under the government of the disturbing influences introduced by higher civilisation (and which leave, therefore, historic records to check and control the linguistic indications), language is the most clinging and persistent of institutions. What is of not less importance, it is by far the most surely traceable in its identity, and in its various changes and ramifications. The variety and definiteness of its facts are far beyond what is to be found anywhere else among the products either of men's minds or of their hands. The difficulty of the problem set before the ethnologist is immense, and he will be unable ever to solve it fully, even by the combination of all attainable evidences, from whatever quarter; but towards its partial solution, language, with all the drawbacks that cling to its application as evidence, will be found to have made the largest contribution.

Mr. Hyde Clarke said, that although the President had offered the opportunity of an immediate reply to what, he stated, was an attack on his (Mr. Clarke's) doctrines, he was glad that Professor Whitney had first spoken. The Professor had given a very clear exemplification of the true conditions of the problem, in the statement that language is a persistent institution, and that it is a valuable indicator of race. Mr. Clarke also concurred with him in esteem for anything coming from the pen of Mr. Sayce, as it certainly is true that language is an indication of association. In stating this part of his case, Mr. Sayce, however, had not exhibited his usual care, nor grasped the whole subject. The gipsies spoke their own language as well as that of the country in which they lived, and thereby afforded evidence of its Aryan character, and of their previous migration. The Jews, in the same way, though not to the same extent, colloquially preserved sufficient of their language to indicate its Semitic character. It was, however, scarcely safe to speak of the Jews as a "pure-blooded race." No one could look at the Jews, or read the testimony of the Bible, without feeling that the Jews are a mixed race. The recent paper of M. Clermont Ganneau on the inhabitants of Canaan, lately read before the Palestine Exploration Society, in *Macmillan's Magazine* for August, gave useful matter on this head. Anyone could see, that while there were Jews of the highest type of beauty, there were others of decidedly negroid characteristics. The study of language in connection with anthropological features may therefore help us in this case, as in many others, where we have mixed races to deal with, and not, as Mr. Sayce has here assumed, one of pure blood. That, in fact, is one element of the value of language, that as so many races are mixed, language may give us one or more indications of the components to be used in conjunction with the other branches of anthropological evidence. While many of Mr. Sayce's facts in relation to what, for the purpose, may be called the historic conditions, are correct, his statement that the languages of savages are in a constant state of flux is not borne out by facts, and is contradicted by observations on a large scale which cannot be got over. There are, undoubtedly, causes of variation and mutation in operation, and notably taboo, which has just been exemplified on the death of the Emperor of China; but the fact of the persistence of language remains. As to the circumstance that neighbouring tribes cannot communicate, it has no necessary connection with the subject. In any centre of refuge or migration—in the Caucasus, Central India, West Africa, the Rocky Mountains, the Amazons—as the representatives of distinct races and languages are brought into neighbourhood, it necessarily follows that their languages are not identical. Again, he begged to call Mr. Sayce's attention to facts, which he could test by the accessible evidence. The short races of North America spoke languages which generally differed from those of the tall races, but these languages of the short races conformed to those of short races elsewhere. There was the extensive parallelism between the aboriginal languages of India and those of

West Africa. It was open to the commonest observation that there were relationships between distant languages, beyond coincidences and beyond the result of commercial or political intercourse. These consequently represented a long efflux of time since the original separation, and thus showed identity of words during hundreds or thousands of years. Nothing but total neglect of the common means of observation could leave anyone in ignorance of the facts relating to prehistoric culture. Mr. Sayce appeared to have regarded simply what may be termed the historic conditions, when the functions of language are different from what they are under prehistoric or savage conditions. The highly organised language of a great empire is a most powerful instrument of culture, and is well calculated to supersede the dialects, which have less power. It is fortunate that so it is, because our own language, among others, has thus become a potent means for the civilisation of barbarians. The social relations of language—and, indeed, the relations of society among rude tribes—are, therefore, by no means such as are described by Mr. Sayce. We have, indeed, much to learn as to the early development of language. Even gesture-language required a more copious examination than Mr. Sayce had given to it. Then, new facts on new subjects were ever opening to them. They were as yet but little acquainted with the forms of male and female languages; while Mr. Menzies had lately, at the Philological Society, brought forward examples of children's language in England, and Mr. Rogers, the orientalist, had promised this Institute a paper on a children's language in Syria. On a continued review he (Mr. Clarke) believed that language was a most useful indicator of race under due conditions, and he concurred with Professor Whitney, while he believed that Mr. Sayce would adopt the like conclusions, when he applied to the earlier epochs the same great powers which had enabled him to do so much for the later and classic periods of language.

Mr. Bouverie Pusey remarked, that to hear such valuable and admirable truths put so effectively, and by two eminent philologists, seemed to him like the dawn of anthropology after a long night. He hoped in future to hear no eminent philologist assert "that the dark-skinned inhabitants of India and the fair people of Northern Europe are descended from one stock"; nor any anthropologist gravely inquire what is the Keltic form of head, or the Aryan type of hair. We might as well talk of a Mahommedan skull or Christian hair. Language is an element of culture, like religion or government. Anthropology should go on its own way, and have its own nomenclature, *e.g.* Homo sapiens var. brachycephalus, &c. Professor Whitney, whom we are proud and honoured to hear speak at this meeting, has not quite remembered some of the facts of savage life. However much we boast of railways and steamships as means of migration, it is probable that savages (with few wants, and nomadic or semi-nomadic habits) find it easier. Professor Whitney seems to think civilised nations are likely to be mixed, because they are comparatively at peace, and savages likely to be unmixed, because

always at war, forgetting that savage war is one of the chief means of admixture, through bringing in captive women as concubines and captive men as slaves, who are afterwards incorporated. Most barbarous tribes are small clans, frequently in motion, and surrounded by a following of foreign or mixed race, which gradually become incorporated in the nucleus. The language of such a community will be that of the dominant or relatively civilised portion, rather than that of the numerical majority. It is in the middle period, between barbarism and civilisation, that migration is most difficult. Language is a test of social contact rather than of race; but social contact generally implies blood admixture.

Mr. HOWORTH, Señor de la ROSA, Major OWEN, and the PRESIDENT also spoke on the paper.

Mr. FRANKS exhibited a gorget from Easter Island.

Professor WHITNEY presented a series of seventeen photographs of Antiquities of Colorado, and made the following remarks: The photographs presented were a gift from Dr. F. V. Hayden, chief of the United States Survey of the Territories, having been taken last summer by the photographic party of the survey. They were seventeen in number, and represented certain remains of a prehistoric aboriginal civilisation in Colorado —remains which had never been visited before by men of science, though rumours of their existence had been heard, and search had more than once been made for them. In the absence of any published account of them hitherto, Professor Whitney said a few words in explanation of their somewhat peculiar character. They occurred through a tract of several miles in the valley of the Maneos, a tributary of the Colorado, in the extreme S.W. corner of the Colorado territory. The broad alluvial valley is, as usual, lined with high precipitous sides, two or three miles apart. It had evidently been cultivated, with help of irrigation, by a settled and agricultural race. These, however, had been driven, by the attacks of wilder tribes, to fortify themselves in and along the valley, and were finally driven out or exterminated. The photographs showed a ruined town in the plain, a mile in circumference, with walls of stone, twenty feet thick at the foundation. There are also isolated towers or forts, built usually on the crest of rocks; or walls on the precipitous fronts, enclosing broad niches behind; or regularly laid stone dwellings nestled in crevices, sometimes almost inaccessible, even without resistance on the part of the occupants. The material used was the stone of the region, which breaks up easily into layers. It had been rudely squared and shaped with stone implements; it was sometimes laid in a kind of mortar. Owing to lack of time,

the party made no extended excavations, and no pottery or other remains were found. It is intended to revisit the locality this year more at leisure.

A special vote of thanks was unanimously passed to Dr. Hayden for his gift, and to Professor Whitney for his attendance.

The meeting then separated.

MAY 25TH, 1875.

Colonel A. LANE FOX, *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

Elections were announced of E. R. MUSPRATT, Esq., F.C.S., Suffolk Hall, Seaforth, Liverpool; EDWARD CROFT GREENWAY THOMAS, Esq., Civil and Sessions Judge of Vizagapatam, India; THOMAS COLLINSON, Esq., of the Elm, Southey, Sheffield.

The list of presents was read as follows, and the thanks of the meeting were voted to the respective donors:—

FOR THE LIBRARY.

From the EDITOR.—Materiaux pour l'histoire primitive et naturelle de l'homme. Vol. VI. Nos. 4 and 5, 1875.

From the BERLIN ANTHROPOLOGICAL SOCIETY.—Zeitschrift für Ethnologie. No. 6, 1874.

From Messrs. LONGMANS and Co.—Native Races of the Pacific States of North America. Vol. II. By H. H. Bancroft.

From Dr. JOHN SHORTT.—Cyclopædia of India. 2 Vols. By Edward Balfour.

From the SOCIETY.—Proceedings of the Royal Society of Tasmania, 1873.

From the Rev. T. FELTON FALKNER.—Proceedings of the Royal Asiatic Society (Ceylon Branch). 1873 and 1874.

From Prof. A. ECKER.—Archiv für Anthropologie, Band 8, No. 4.

From the SECRETARY OF STATE FOR INDIA IN COUNCIL.—Census of the Bombay Presidency. Parts 1 and 2, 1872. Ditto, Madras Presidency. Vols. I. and II. 1871. By W. R. Cornish, F.R.C.S.

From the AUTHOR.—Inaugural Address of the Psychological Society of Great Britain and Ireland, April 14, 1875. By Mr. Serjeant Cox.

From the SOCIETY.—Journal of the Royal Geographical Society. Vol. XLIV.

From the EDITOR.—Revue Scientifique. Nos. 46 and 47, 1875.

From the AUTHOR.—Sulla radice bifida dei canani inferiori nell' uomo; Della capacità delle fosse nasali; Dei caratteri gerarchici del cranio umano; Il ritratto di due chiriguani. By Prof. P. Mantegazza.

From the Society.—Proceedings of the Royal Society. Vol. XXIII. No. 161.
From the Author.—Principles of Mythonomy. By Luke Burke.
From the Editor.—Nature (to date.)

For the Museum.

From J. Milligan, Esq.—Tasmanian Necklace.
From Dr. John Shortt.—Skeleton of Male Hindu (Soudra).

The following papers were read by their authors:—

A further Account *of the* Beothucs *of* Newfoundland.

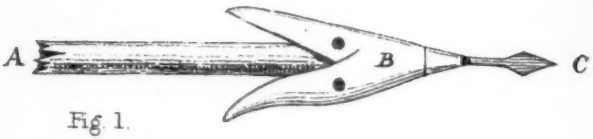
By T. G. B. Lloyd, C.E., F.G.S., M.A.I. [With Plate vii.]

The following account of the Aborigines of Newfoundland is a continuation of the subject of a paper I had the honour of laying before the Institute last year.*

The second paper contains a description of a number of stone implements which I discovered during a cruise round the island last summer, and inferences as to the probability that the Beothucs were the fabricators of them, and of the origin and probable destiny of that people. In an extract from the voyages of Cabot, given at the commencement of my former paper, mention is made of savages having been seen on St. John's Island. It appears to be a matter of doubt whether the Island of Newfoundland is there referred to, or whether Prince Edward Island, which was for a long time known as the "Isle of St. John," may not have been the one to which Cabot alludes.†

Old Camping Grounds; Bonavista Bay.—On the north-west shore of "Bloody Bay Run," at the north side of the entrance to Rocky Bay, in Bonavista Bay, a narrow, gravelly beach connects an outlying mass of rock on the east with the mainland. It is about a quarter of a mile long, and of an average width of about 120 yards, being narrowest in the middle, and widening out on the east and west. Its flat surface, which rises about 5 or 6 feet above sea level, is partially covered with long grass, the centre portion being bare of vegetation. On the western side of the bar are two rows of circular pits, numbering thirteen in one and three in the other. At the eastern end a row of three pits was visible, which corresponded in direction with the longer row at the western end. They averaged about 12 feet in diameter, and were placed at distances from each other varying from 3 feet to 24 feet. Their depths also differed: some of them were about 2 feet in depth, whilst others did not exceed 6 or 7 inches. All the pits were flat at the bottom. The relics of their former occupants comprised a piece of round iron, about 4 inches

* See "Journ. Anthrop. Inst.," vol. iv. p. 21.
† See the "Maritime Monthly," vol. iv. p. 291-92.



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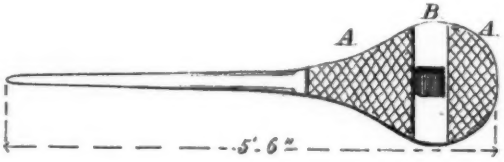


Fig. 2.

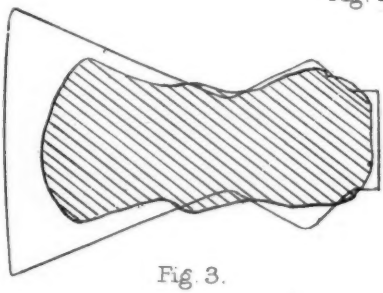
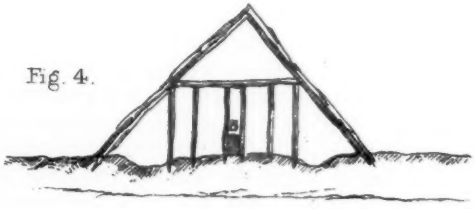


Fig. 3.



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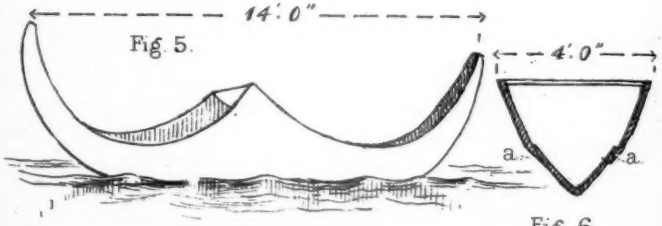


Fig. 5.

Fig. 6.

IMPLEMENTS, &c USED BY THE BEOTHUGS.

long, flattened at one end, and very much rusted; some stones, bearing marks of fire upon them; a *few bones;* and a small heap of single valves of shells of *Mya arenaria* and clams. It will be observed that the locality selected by the Beothucs is well adapted for a fishing station, besides commanding an uninterrupted view across the sea to the north and south.

Mouth of Victoria Brook; Red Indian Pond.—Victoria Brook, the principal tributary of the Exploits river, enters the south side of Red Indian Pond through three outlets. On a low sandy point, projecting from the eastern side of the chief outlet into the pond, were the remains of a small encampment; in a small clearing amongst the alder bushes, three circular wigwam pits were arranged in a straight line, near the water's edge. One of them was 15 feet in diameter, and the other two measured 10 feet 6 inches across the middle. They were placed about 7 feet apart. Numerous small fragments of bones were found in the centre of the larger one. The remains of a circular trench were visible around its edge.

The camping ground stands on the line along which the Caribou deer are accustomed to cross Red Indian Pond during their periodical migrations. Judging from the small size of the encampment, and its situation, it was probably used only at such times.

Red Point.—Eastern Arm of Red Indian Pond.—Near the edge of a steep bank of drift overlooking the water, and about thirty feet above it, was a group of wigwam pits, twenty-one in number. At a short distance to the east was another series of pits, which extended as far as Low Point, where the Micmac wigwam is built. The largest pit of the group commanded an uninterrupted view across the arm of the pond. It was in all probability so placed for observing the movements of the deer when crossing over to the point below. A circular excavation had on one side a raised bank of earth, about four feet high above the bottom of the trench inside. The top of the bank slopes gradually down to Low Point, where it is not more than three or four feet above the pond. The largest pit I have seen measured thirty-three feet in diameter. The Micmac trapper of the district gave me the following description of the wigwam, which was formerly erected over it. (Plate VII. fig. 4.) He received the account from his father, who hunted over the same grounds about forty years ago.* It was built with

* Bancroft, in his interesting volume on the "Native Races of the Pacific States of North America," in describing the various devices used by the Columbians for capturing game, says the frightened deer are driven into an ambush by converging lines of bright-coloured rags, so placed in the bushes as to represent men—p. 264.

eight sides, at the corners of which upright posts were driven to carry a bow frame for supporting the sides of the wigwam. The entrance is shown at B. Inside one of the pits a few strips of decayed birch bark and fragments of charcoal were found, and in and around others a considerable number of the broken shafts, and articular ends of marrow-bones of deer, besides some astragali, lay under the turf. Almost all the marrow-bones were broken off short at the ends, but one was found which had been split open lengthwise, in the manner usual amongst the Micmac hunters. These people have been accustomed to camp on the spot for the last forty years. It is, therefore, not surprising that the refuse-heaps of the original and present occupiers of the place should be found mingled together.*

About three miles to the north of the eastern arm there is a deer fence, running in a direction north and south, across a wide marsh. It has been reconstructed by the Micmac Indians, partly out of the old materials left by the Beothucs, who formerly built one on the same site. The stakes, which are, for the most part, those planted by the Beothucs, have been re-stuck in the ground in a zigzag manner, and on their tops, which now stand about three or four feet above the surface, were placed sods of grass, to serve the same purpose as the "sewels" described in my former paper. This fence formerly extended as far as the south-east side of Grand Pond, a distance of about thirty-five miles, as marked on one of the maps of North Island. There are also remains of another fence on the north-east of the same pond.

The other localities where remains of old encampments still exist in the district of the river Exploits are as follow:—Right bank of Exploits river, about three or four miles north-east of the mouth of Noel Paul's Brook; junction of Badger Brook with a stream running from Little Red Indian Pond; Rushy Pond, on left bank of Exploits river. Besides these there are a few between Grand Pond and Hall's Bay on the Indian Brook.

Mr. Alex. Murray, of St. John's, told me he had found, about four or five years ago, remains of poles and birch bark coverings of wigwams at Badger Brook.

Canoes (Pl. VII. figs. 5, 6).—In a foot-note in my former paper (p. 27) I expressed a fear that the shutting-up of the canoe, as described by Mr. John Peyton, would have caused the joint (fig. 6, *a*, *a*) at the keel of the canoe to open and let in the water. During a short interview with Mr. Peyton in November last, he gave me to understand that the joint in question was made of *a kind of plaster*, by which, his

* It is customary among the Micmac Indians to divide the hunting grounds into separate districts, which descend from father to son.

son told me, he referred to a strip of deerskin, which was fastened to the lower edges of the birch bark, thus forming a flexible hinge, by which means the canoe could be folded up without injury. Mr. Thomas Peyton, who said he once found the remains of a canoe, described the side of it as consisting of two sheets of bark, the edges of which formed a joint half-way between the keel and the gunwale.*

The *Arrow*, of which Cartwright gives a description (see former paper, p. 28) was fitted with an ornamentally carved horn, fastened to the shaft by iron pins. Mr. Peyton told me he had one in his possession, but was unable to find it during my visit.

The *Harpoon* which the Beothucs used for killing seals differed only in the shape of the head from those made use of by the Eskimo of the north-east coast of Labrador. Fig. 1, pl. VII. is a copy of the sketch which was drawn for me by Mr. John Peyton. The wooden shaft, A, is inserted in a socket in the barbed piece of bone, B, in which are *two* holes for the attachment of cords. Into the extremity of B an iron point of a lozenge shape, C, was driven. The object of the second hole is not apparent.

Snow-shoes (Pl. VII. fig. 2).—The snow-shoes were of a somewhat different shape and construction from the ordinary North American type, resembling the racket of our English game, inasmuch as they were broader in the nose, and far longer and more taper in the tail, which caused the ends to bend upwards under the weight of the body. A board, with a hole in it to receive the toes, B, was fixed across the middle of the "racket" bow, A A. The matting was composed of "seal skin or of cord" (or more probably, I should think, of babiche made of deer or seal skin).

During my first visit to Mr. John Peyton, in reply to the question, "How did the Beothucs obtain fire?" he replied, that they ignited the down of the blue jay † by sparks struck from two pieces of iron pyrites. This statement I omitted in my former paper, on account of its apparent improbability; but one evening during my stay last fall in the wigwam of the Micmac hunter Johnny Joe, my guide, Reuben Soulianne, remarked that the Red Indians were witches, for they could raise a fog through which to escape; to which credible statement, when pursued, Johnny Joe added, "Yes, and could kindle a fire from the down

* At the present time it is difficult to get birch bark in North Island of a sufficiently good quality for making canoes. There is only one locality known where such can be procured, and I have been told that an old Indian named Noel Paul is the only man left who is capable of making them.

† The bird spoken of is not the blue jay, but the Canadian jay (*Corvus canadensis*), which is a constant attendant at meal-time in the bush. It is ordinarily called the blue jay by the Newfoundlanders.

of a blue jay and pieces of mundic, or flint and steel." Subsequently I mentioned the subject to a seafaring man, whom I met at Jil's Cave, who told me he had seen the feathers of the blue jay take fire and blaze up like paper. On repeating to Thomas Peyton what his father had said, he told me it was quite a mistake. I regret I did not put the question to his father; but from the circumstance that he now, at the age of eighty, had become very deaf and failing in memory, I found it very embarrassing to obtain even the few details I got from him during an evening's visit.

The *iron axe*, which I obtained from Johnny Joe, who said he found it at the bottom of Red Indian Pond, was recognised by Mr. J. Peyton as one of those which had been stolen by the Beothucs from the white settlers. It was originally of the shape shown by the outline in the sketch (Pl. VII. fig. 3), and must have been a clumsy tool, such as the British woodman uses at the present day.

The Indians had, it seems, cut away the wings, so as to form an implement, as far as was possible, like a tomahawk, as shown by the shaded part of the figure.* The groove on each side shows where the process of conversion was discontinued. Some such tool as a cold chisel must, I imagine, have been used in the operation.

An *iron arrow-head*, with the mark of the broad arrow upon it, was found near the mouth of Badger Brook. It is one of a number made for Lieutenant Buchan, who, with Mr. Peyton, conveyed them to the places frequented by the Beothucs, and tied them up in bundles to the branches of the trees for their use. According to Mr. Peyton, they were far inferior in workmanship to those manufactured by the Indians.

Mr. James Howley, of St. John's, has given me some information obtained from Mr. Peyton some time ago, which is as follows:—The Beothucs were a much finer and handsomer race than the Micmacs, having more regular features and aquiline noses; nor were they so dark in the skin. They were of middle stature, and of a very active build. They did not appear to be so fond of gaudy colours as their continental neighbours. They constructed a wall of stones, clay, and sods on the outside of the trenches of their wigwam pits.

Further information regarding the Red Indian, in the Museum at St. John's, Newfoundland.—Mr. Alexander Murray, in answer to my queries, says, in a letter, dated March 19th, 1875: "I have made a discovery regarding the Red Indian skull I have. It appears that Dr. Winter, of this place,

* The shape of the American axe of the present day appears to have been copied from the stone implement of the country.

took it and a thigh bone from the skeleton which was found on the straight shore opposite the Indian Islands, in Sir Charles Hamilton's Sound. The skeleton, according to Dr. Winter, had been wrapped in birch bark, and buried in a sitting posture, and had various stone implements entombed, together with large crystals of iron pyrites to strike fire with when he woke up again. Dr. Winter further states, that the remains bore evidences of having been shot, some large seal- or swan-shot being found sticking in the bones, some of which and the skull were fractured."

They had a very ingenious mode of preserving their venison in a fresh state; they first of all cut it into thin strips, and after having taken out the veins and sinews, and washed away the blood, they packed it in alternate layers of meat and melted tallow, in a casing of birch bark, which they bound up tightly, thus forming an hermetically-sealed mass. On one occasion when Mr. Peyton was on an excursion up the river Exploit, he surprised a party of Indians at dinner; they took to the woods on seeing him, leaving everything behind. A tin kettle, stolen from the fishermen, was hanging over the fire, in which venison was boiling. It is a curious circumstance that the Indians, on seeing a gun in the hands of a white man, would instantly fly for their lives; but as soon as it was discharged, they would return and take it in their hands, and examine it with the greatest curiosity. If this be true, it would indicate that they must have been, at one time, on familiar terms with the white population. (See former paper, p. 22).

The skull of a woman which I saw in the Museum of the Geological Survey, at St. John's, Newfoundland, at the time of my visit in the year 1873, had a label attached to it, "Skull of Red Indian." My inquiries at the time as to its true history were not satisfactory; I therefore hesitated to affirm its authenticity. However, on my return to Newfoundland last year, I made further inquiries respecting it, with the following result:—The Indian woman, Shawnadithit, mentioned in the former paper, who was at the time living in Mr. Peyton's house, procured the skull for the explorer Cormack, to whom she presented it, together with a lock of her hair and other small articles. The whole of these were given by Cormack to the Beothuc Society of St. John's, and, subsequently, were transferred to the Athenæum there, from whence they were finally removed, together with some stone pots, axes, and arrow-heads, to the Museum of the Geological Survey under Mr. Murray's care.

Mr. Peyton's answers to some miscellaneous queries re-

specting the Beothucs.—The Newfoundland dogs were savage towards the Indians, and whenever Mary March touched one of them, it would show signs of anger.

The Indians worshipped the sun if they worshipped anything; but it is not known whether they had any religion. They had single wives, and the women were chaste. They left the hair on the skins, which they used for clothing, clipping it short, and wearing the hairy side next the skin. They dressed the skins soft and supple.

Old Paul, the Micmac trapper of Exploits river, told me he believed the last of the Red Indians perished from starvation during the winter time, after having been driven away northwards. There is a tradition that the remnant of them, after climbing to the summit of "Indian" Hill (Half-way Mountain of the maps), took a track northwards, and were never seen again.

The most important evidence regarding the ultimate fate of the "Last of the Beothucs," is that given me by Mr. Murray. He was told by Mrs. Peyton, that according to a statement made to her by Shawnadithit, the Indian woman who lived with her, only fourteen individuals of her tribe were then living (about the year 1825).

An anecdote of Mary March, related to me by Mr. John Peyton, may serve to illustrate in a measure her natural disposition. After her capture, she refused to take any food from anyone except himself, and used to sleep in the tent by his side. One night she was missing from her accustomed place. At dawn of day a search for her was made. She was at last discovered crouching in the snow about two or three hundred yards from the tent. It appeared that, having taken off her deerskin dress, and laid it under her on the snow, she had dragged herself along on her hands and knees, without leaving any mark of her track behind her, except that made by the dragging of the skin. On finding she was discovered, she bared her breasts, thus disclosing her sex, of which Mr. Peyton was unaware, as the men and women dressed alike. She soon became attached to him, and would place his snow-shoes under her pillow on retiring to rest, for fear he should leave her behind.

Cooking Utensils.—In my former paper (at p. 22) an account is given of the vessels of birch bark which were found by some English sailors in an encampment of the Beothuc Indians whilst a feast was going on. Now, it is doubtful whether the pots were hung over the fire, or whether the water therein was boiled by throwing in hot stones. Cormack, in his account of an expedition across Newfoundland, says, in reference to the

remains found in an Indian village:—"There was also discovered the remains of a vapour bath. The method of raising the steam was by pouring water on large stones, made very hot by a pile of fuel around them. After the ashes were cleared away, a framework closely covered with skins, to exclude the external air, was fixed over the stones. The patient then crept in under the skins, taking with him a birch-bark bucket of water and a small bark dish, by which he poured the water on the heated stones." The "three stems" which supported them may have been three sticks, bound together at their upper ends, from which the kettle was suspended.* It appears that the Beothucs did not make any kind of pottery; but, according to Mr. Peyton, they manufactured vessels of soap-stone, a circumstance to which I shall refer again in my description of the stone implements.

The Vocabulary.—At p. 37 of my former paper will be found a vocabulary of the language of the Beothuc Indians. In order to get a start on the right trail, I wrote a letter to Dr. R. G. Latham, enclosing a copy of my paper, in answer to which I received a reply, from which the following is an extract:

"The Beothucs were 'Algonkin,' as opposed to 'Eskimo,' and as Algonkins they were not a mere branch of the Micmacs, Scoffies, and the like, of the main continent. They were members of a division of their own—not a very distant one, but still a separate one.

"Upon my inspection of your vocabulary, I venture, *meo periculo*, on the following conjectures, though I, of course, look upon them as certainties:—

"'*Good night.*' This is the word in which the ethnological name originated. It was the word caught up by the earlier discoverers, *i.e.* the Beothuc Indians—the 'Good-night Indians.' This is a recognised process of developing names. The root 'kuis' = 'sun,' and 'moon'; kuis = light. Under 'moon,' 'kuis [and] washewnish'—light of night; being a compound, and *not* two synonymous words. (See 'night.') The same is doubtless the case with 'sun'—light of day, though, as we have no word for day, we cannot prove it. Most of the Algonkin languages illustrate this."

Explanation of Plate VII.

Fig. 1.—Harpoon-head used by Beothucs (from Mr. Peyton's sketch). A, wooden shaft; B, barbed piece of bone; C, triangular head of iron.

* I have been told by the Micmac Indians that water can be boiled in such vessels over a fire, if done in a gradual manner.

Fig. 2.—Snow-shoe, used by Beothucs. A A, netting of cord or sealskin; B, board, with foot-hole.

Fig. 3.—Axe found in Red Indian Pond, Newfoundland. The outline shows probable original shape of axe, whilst the shaded part of the figure represents its form as converted into a tomahawk by the Beothucs.

Fig. 4.—Section through centre of a Beothuc wigwam. B, the entrance.

Fig. 5.—Red Indian Canoe of Newfoundland.

Fig. 6.—Sketch-section of canoe amidships.

DISCUSSION.

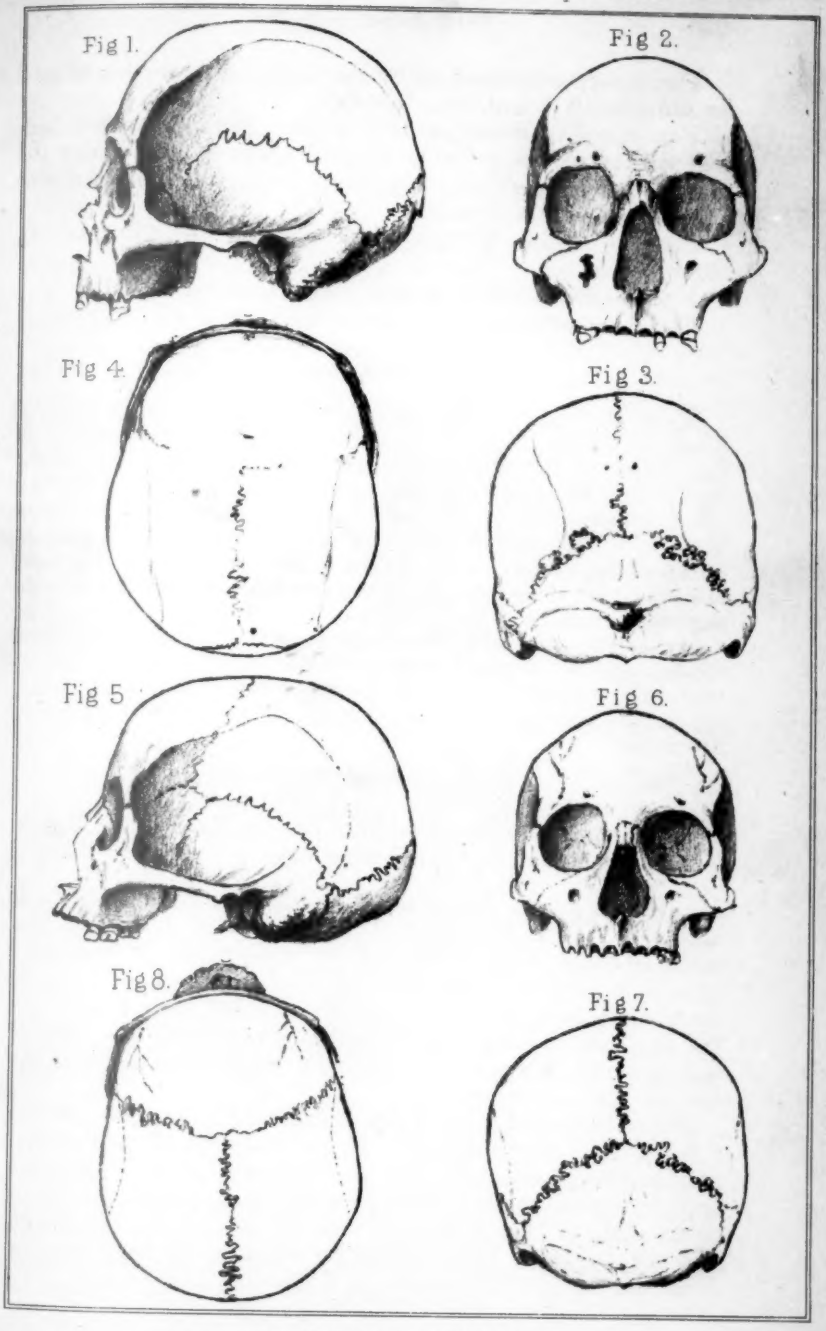
MR. E. B. TYLOR inquired whether any exact description has been preserved of the complexion of the Beothucs. The presence of fair tribes on the north-west coast of America, described as not darker than Spaniards, and as sometimes with blue eyes, had given rise to ethnological speculations as to immigration of tribes from Asia, &c. The similar phenomenon of fair tribes appearing in Newfoundland seems to throw light on this problem, but the mere assertion that their complexion was fair is too vague to found an argument upon.

MR. LLOYD, in reply to the query respecting the complexions of the Beothuc Indians, said that, in the opinion of Mr. John Peyton, who is the only man now living who was familiar with their personal appearance and with their complexions, they resembled gipsies or Spaniards.

DESCRIPTION *of two* BEOTHUC SKULLS. By GEO. BUSK, F.R.S., V.P. Anth. Inst. [With Plate viii.]

MR. LLOYD, on his late visit to Newfoundland, was unable to obtain any skull belonging to the aboriginal Indian inhabitants, although he was afforded an opportunity of inspecting several, and had a photographic view of one taken. Owing to the circumstance, however, that this view had been taken from the skull in an oblique position, and was without any scale of measurement, it was not available for the determination of the craniological characters.

But as he was desirous of supplementing his remarks upon the "Beothucs of Newfoundland" by some account of their cranial peculiarities, I have, at his instance, been very liberally allowed the opportunity of examining and figuring two authentic specimens of the skull of that people, which are now in the Edinburgh Museum, having, I believe, been presented to the late Professor Jamieson, by Mr. M'Cormack, in 1826.



BEOTHUC SKULLS.

1—4 . ♂.
5 . 8 . ♀.

I.—One of these skulls (Pl. viii. figs. 1—4.) is that of a "male Red Indian from Newfoundland."

It is the skull of an elderly man, and has the lower jaw attached. Its principal characters are as under :—

1. *Norma lateralis.*—Forehead high and arched; the outline slopes with a gentle curve from the vertex to the apex of the occipital. Occiput prominent; spine very strongly developed. Subinial portion much hollowed and horizontal, mastoid processes very large and thick; but the digastric fossa of moderate size. Zygomata thin.

2. *Norma facialis.*—Forehead narrow, but rounded. Frontal sinuses well marked. Supraorbital border towards external angular process rather thick, and that process is prominent. Supraorbital foramen complete. Orbits quadrangular (1·5 × 1·5). Nasals broken off; what remains of them shows that they were strongly carinate and continuous with the forehead. Nasal spine very prominent. Face orthognathic.

3. *Norma occipitalis.*—Outline subpentagonal, the sides sloping inwards from the mastoid region. The temporal lines are seen approaching within two inches of each other, at about the level of the summit of the occipital. They extend far further back than is usual.

4. *Norma verticalis.*—Outline broadly oval. Zygomata just visible (subphænozygous).

Norma basalis.—Palate deep, elliptical. *Foramen magnum* (1·5 × 1·3), horizontal.

This skull is chiefly remarkable for the elevation of the frontal region seen in profile, and the comparatively sparing elevation of the parietal region, which, however, cannot in this case be assigned to an early closure of the sagittal suture. As in the female skull, the occiput is projecting. In fact, the outline of the two skulls, starting from the vertex backwards, is very nearly alike in the two. The chief difference between them is the more upright forehead in the female skull. In both there is no depression at the root of the nose, and in both the nasal spine is very prominent. In both, also, the greatest width is in the squamosal above the auditory foramen.

II.—The other skull (Pl. viii. figs. 5—8) is entitled that of "a female Red Indian of Newfoundland," who died, or was killed, in the year 1823. It exhibits the following characters :—

5. *Norma lateralis.*—Forehead upright, but rather low, continuous with the nasals, of which bones only a small portion remains. The outline is moderately arched in the vertical region; the occiput projecting, much hollowed in the subinial portion, and bulging on either side below the superior semicircular lines. The maxilla is slightly prognathous.

6. *Norma facialis.*—Forehead narrow; supraorbital borders thin; frontal sinuses very faintly marked; supraorbital foramen complete. Orbits subcircular, large (1·5 × 1·5). Nasal spine prominent. Nasal opening triangular.

7 *Norma occipitalis.*—In this view the outline is pentagonal, sloping on either side rather rapidly, from the sagittal suture (subfastigiate), and flattened on the sides.

8. *Norma verticalis.*—Outline broadly oval; zygomata invisible (aphænozygous).

Norma basalis.—Three sound but worn molars remain on the left side; all the other teeth are gone, but the alveoli are perfect. Palate deep and narrow. Pterygoid plates remarkably narrow. *Foramen magnum* circular, horizontal.

The sutures are all open, and finely serrated; the sphenoparietal measure $\frac{2}{4}$ of an inch. Remarkably deep grooves for the anterior branches of the temporal artery. The zygomata slender. The mastoid process well developed; the digastric fossa deep and wide.

On comparing the photographic figures procured by Mr. Lloyd, a close resemblance in most respects may be traced between the skull of the female above described and Mr. Lloyd's figures. Amongst the points of resemblance I may notice the upright frontal outline continuous with the nasals—the absence of indications of the frontal sinuses and the slight maxillary prognathism. In the occiput also the same degree of projection may be perceived, although, from the oblique position of the photographic figure, this character is somewhat concealed. The orbits, however, in the photograph are more angular than in the skull.

It may be remarked that neither of these skulls presents the least sign of artificial deformation.

The dimensions and capacity of these two Beothuc skulls are given in the subjoined table:—

		mm.	♀ No. 1.	♂ No. 2.	mm.
Length	.L	.170.	6·7	7·1	180
Breadth	.B	.140.	5·5	5·8	147
Height	.H'	.142.	5·6	5·8	147
Least frontal width	.B'	.99.	3·9	4·1	104
Coronal width		.119.	4·7	4·7	119
Parietal width		.135.	5·3	5·4	137
Occipital width		.112.	4·4	4·6	117
Zygomatic width	.J	.132.	5·2	5·9	150
Frontal radius		.117.	4·6	4·9	124
Vertical radius		.119.	4·7	4·9	124
Parietal radius		.122.	4·8	4·75	121
Occipital radius		.99.	3·9	3·75	95

	mm.	No. 1.	No. 2.	mm.
Maxillary radius .	102.	4·0	4·3	109
Fronto-nasal . .	94.	3·7	4·0	102
Circumference . . U	493.	19·4	20·5	521
Longitudinal arc . S	356.	14·0	14·5	368
Frontal longitudinal arc S_1	119.	4·7	5·1	130
Parietal longitudinal arc S_2	127.	5·0	5·2	132
Occipital longitudinal arc S_3	109.	4·3	4·2	107
Occipital (subinial) .	46.	1·8	2·4	61
Frontal transverse arc	300.	11·8	12·7	323
Vertical transverse arc	325.	12·8	13·1	333
Parietal transverse arc	335.	13·2	12·8	325
Occipital transverse arc	274.	10·8	11·0	279
Latitudinal index .C.I	.	·820	·816	
Altitudinal index .	.	·830	·816	
Gnathic index . .	.	·500	·325	
Capacity C.I. . .	.	84·	92·	

Explanation of Plate VIII.

Figs. 1 to 4. Skull of a male Red Indian of Newfoundland.—Fig. 1, norma lateralis; 2, norma facialis; 3, norma occipitalis; 4, norma verticalis.

Figs. 5 to 8. Skull of a female Red Indian of Newfoundland.—Fig. 5, norma lateralis; 6, norma facialis; 7, norma occipitalis; 8, norma verticalis.

On the Stone Implements *of* Newfoundland. By T. G. B. Lloyd, C.E., F.G.S., M.A.I. [With Plates ix. x. xi.]

These implements belong to the class known as surface implements. Numerous discoveries of chisels, gouge-shaped implements, stone pots, spear-heads, &c., have been made in various parts of the island, a few of which have found their way into the Museum of the Geological Survey at St. Johns. Some have been carried away out of the country as "curios," whilst others have been preserved for use as hones by their discoverers. The localities at present known are comprised in the following list. Starting from St. Johns, from east to west, and passing round the island, they will be met with in the following order:—Fox Island, Randra Sound; Trinity Bay; Bonavista Bay; Funk Island; Torilinguet Island; Nôtre Dame Bay (Bay of Exploits and Hare's Bay); Granby Island, Sop Island, White Bay; Conche Harbour; How Harbour, Hare Bay; Bonne Bay; mouth of Flat Bay Brook, St. George's Bay; Codray River. It is probable that the foregoing list does not include many of the localities where stone implements have

been found, because such relics are generally regarded as of little value, and no record is kept of their discovery.

It is worthy of remark that the localities in the foregoing list are situated on or near the sea coast.

The stone implements which had been brought to notice previous to my visit in 1873, were, as far as I could learn, of the larger sorts, viz. stone pots, gouges, and spear-heads, with the exception of a few "sinkers" dug up at the Indian Burial Ground in Nôtre Dame Bay, until my discovery of stone relics of different classes at Sop Island and Conche Harbour.

Sop Island.—At the back of a small cove near the northern end of the island is a small piece of ground which had been converted into a potato patch by an Indian family then living on the island. In the blackish vegetable soil of which it is composed, and at a depth of a few inches below the turf, a considerable number of stone implements were discovered, such as chisels and pieces of broken pots; some of them had been found, previous to my visit, by the Indian people, and removed to their dwellings. On visiting the spot, I picked up, after a short search amongst the potatoes, two or three finely worked arrow-heads. Whilst I was thus occupied, my Indian guide set to work to remove the turf from the sloping bank between the potato ground and the sea-shore. This search resulted in the discovery of a good number of small arrow-heads, fragments of stone pots, and numerous chips and flakes. In many places the soil bore evident marks of fire; some small bones of birds, which had apparently been burnt, were scattered thereon. The arrow-heads, with the chips and flakes, lay together in small groups.

Conche Harbour [Plate ix].—A triangular-shaped peninsula is connected with the mainland by a narrow neck of land about a quarter of a mile wide, which separates the harbours of "Conche" and "Range." The highest part of the peninsula lies to the east, which is terminated on the coast-line by lofty and precipitous cliffs. On the west side the ground slopes gradually down towards the sea, and a level area between the foot of the sloping ground and the landwash is in part covered with marshy meadows and partly by a bare pebbly beach, on which are built the houses of the fishermen. The rocks in the harbour were formerly much frequented by bay seals. Near the southern end of the peninsula, on a sloping bank, about 28 feet above the sea, was discovered the collection of small stone implements described. A fisherman, named Flynn, who owns the ground at that spot, informed me that whilst clearing away the turf for a potato garden, he came upon what he supposed were the remains of a burial-ground. As well as he could remember, the following appearances presented themselves. Below the

surface of the turf, at a depth of about eighteen inches, there occurred, in descending order:—

1. A layer of yellow clay;
2. A layer of charcoal and ashes;
3. Slabs of large and small stones;
4. Human skeletons arranged in *natural* position, the bones of which crumbled to pieces on being touched. With them were mixed bones of seals and whales. The deposit of bones extended over the whole area of the garden, and may have continued beyond it; he also found measures, stone pots, "drinking-cups" of stone, some whole and others in fragments, and a stone "knife," about eighteen inches long.

A crop of potatoes standing in the garden prevented me from making a thorough search there; but on scooping amongst the soil in the furrows I gathered up pieces of clay, some decayed bones, and a few arrow-heads and flakes. Around the outside of the fence, however, a piece of a stone pot, smoothed on the under side, and showing the marks of a tool, and some pieces of charcoal, were found under the turf.

Having several days at my disposal, I set the Indian guide and one of the crew of our schooner to strip off the turf from the surface of a low sloping bank lying at a distance of about fifty yards from the garden. Underneath it, in the black soil, the greater number of the smaller implements were discovered. On the surface of the rock, forming part of the slope of the bank, the best finds were made. This spot is indicated by a cross on the map (Pl. ix.). At Sop Island the greater number of the implements were also found along the slope of a bank; but too much stress must not be laid on the circumstance, because in several places on the level ground arrow-heads turned up in considerable quantities in proportion to the size of the area searched. The average depth of the surface of the rock below the turf was from a foot to eighteen inches. Occasionally pieces of stone pots, and smooth, oval-shaped pebbles were met with; the latter did not bear either marks of fire or signs of having been used. Pieces of charcoal and chips denoted the presence of worked implements, as at Sop Island. At Conche Harbour a musket bullet, much corroded, was found in the river bank, just below the surface of the turf, which is about one foot thick.

No remains of any implements of bone or horn were discovered.

Small lumps of a black, carbonised substance, containing flakes and small pebbles, together with pieces of charcoal, were found in places. The freshly broken surfaces of the agglomerate show a shining lustre like bitumen. Small pieces of it placed

on a red-hot coal burn with a clear flame, and give off a faint smell. This substance has probably been formed by the flowing over, on to the ground, of seals' fat during its conversion into oil by boiling.

The collection made at Conche Harbour was the result of two men's work for two days and a half.

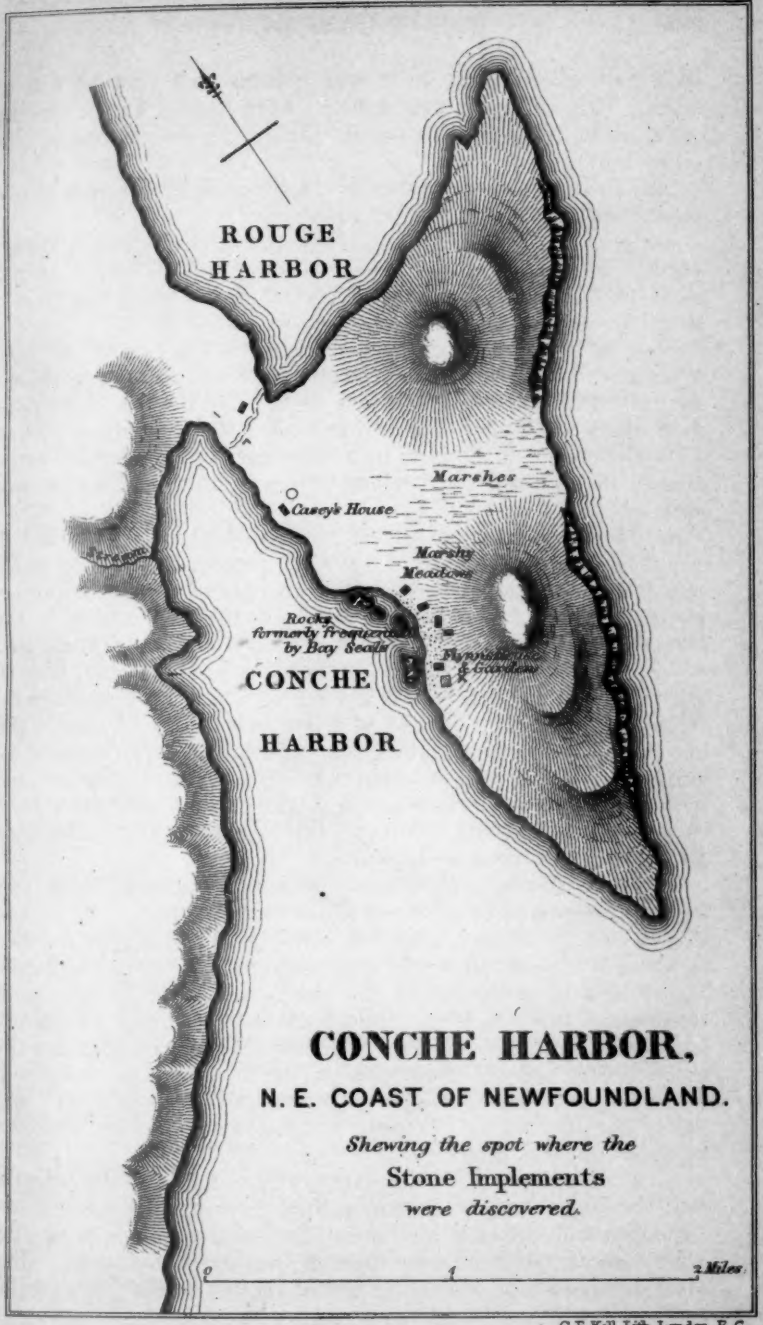
Judging from the vegetation now growing in the neighbourhood, it appears probable that formerly the land was covered with brush, consisting of dwarf Arabian fir, of which the greater part has been cleared away by the settlers.

Description of the Stone Implements.—They may be conveniently divided into nine classes, viz.:—1. Axe- and chisel-shaped tools. 2. Gouge-shaped tools. 3. Broken stone pots. 4. Sinkers. 5. Spear- and arrow-heads. 6. Scrapers or planes. 7. Fish hooks. 8. Objects in the course of manufacture, cores, flakes. 9. Whetstones, rubbing stones, and other miscellaneous articles.

1. These implements appear to have been fashioned out of rough pieces of stone by the simple process of rubbing down one end to a chisel-shaped edge. Two are of a soft magnesian stone. Fig. 4, Pl. x., represents an instrument which is the largest and most symmetrical of any I have seen, and is composed of chloritic slate. It has been used as a whetstone. Fig 5, Pl. x., is said to have been taken out of a Red Indian wigwam in the year 1810. The man who got possession of it said it fell out of the hand of an Indian, who was apparently occupied in skinning or cutting up some animal, as it was found to be covered with blood. The dark-coloured marks upon it may have been caused by blood-stains. None of the tools show any indications of having been mounted on handles.

2. These also appear to have been manufactured from any suitably shaped pieces of stone which came to hand. An exception to this, however, is manifest in the large and highly finished implement of chert shown in a photograph which was exhibited. It will also be noticed that the smaller ends of the specimen represented in fig. 5, Pl. x., and of another specimen exhibited, have been ground to an edge. The latter was found amongst the arrow-heads and other articles on the bank before described. The material is of soft magnesian stone and hardened clay. All the articles belonging to classes 1 and 2 show marks of fracture on their bevelled edges.

3. A comparison of the fragments of the stone vessels indicates that the larger ones, when whole, were from eight to nine inches in length and breadth, and about four or five inches in height, with a depth inside of some three inches or thereabouts. The smaller vessels were about the size of the one in the photograph,



CONCHE HARBOR,

N. E. COAST OF NEWFOUNDLAND.

Shewing the spot where the
Stone Implements
were discovered.

C.F. Kell, Lith. London. E.C.

described at p. 33 of my first paper. One specimen appears to be a portion of a small oval-shaped vessel. The section of one, restored as in the woodcut, shows the original shape of one of the vessels. The sides slope outwards, and diminish in thickness towards the top. In some of them the rounding of the edges of the bottom is much greater than in others. The material of which the vessels are composed is impure steatite. It is found in abundance on the north-east side of Newfoundland.* It is obvious that the terms Potstone and Lapis ollaris imply that the material has been extensively employed in making utensils.

Section through centre of a stone vessel, one-eighth original size.

It will be observed that there are in some of the fragments small holes, made by some sharp-pointed instrument. Their purpose may have been to serve for the attachment of some kind of fastening to bind the broken pieces together. An Eskimo lamp of steatite, in the Christy collection, has a hole at each of the four corners for suspension. At p. 114 of "Wilde's Catalogue of the Museum of the Irish Academy" is a description, accompanied by a sketch, of a bowl-shaped vessel of impure potstone found in the Shannon excavations. It is described as a drinking-cup, and has the following dimensions:—$4\frac{3}{8}$ inches across the bowl, $5\frac{1}{4}$ inches as measured from end of handle to outside of rim, and $1\frac{1}{4}$ inch in depth. It appears from the sketch to have a small hole, which passes through from the handle into the interior of the bowl. If so, it may have served to carry a wick. In "Wilson's Prehistoric Annals of Scotland" (p. 147, 1st edition), a reference is made to some rude vessels of Lapis ollaris from the Island of Uyea. In shape and construction they differ from the stone vessels from Newfoundland.

The pieces of stone pot, when freshly dug up, were covered with a coating of the black soil in which they were found; besides which there was a hard layer of some black-coloured substance adhering firmly to the surface of the stone, which strongly resembles the cementing portion of the agglomerated mass already described. The larger stone vessels were probably used for boiling seals' fat, and the smaller ones, as suggested to me, may have been designed for lamps, as amongst the Eskimos. There is a small bowl-shaped vessel in the possession of Captain Knight, of St. Johns, Newfoundland, which much resembles some of those found in Scotland and Ireland, excepting that it has no handle. One of the same kind was found by Mr. Flynn in his garden,

* Dana, in his work on "Mineralogy," gives the following description of it:—"*Potstone* or *Lapis ollaris* is ordinary soap-stone, more or less impure. Slabs of steatite are extensively employed as fire stones in furnaces and stoves."

according to his description of it. He used it for some time as a saltcellar.

4. At page 35 of my former paper I described an egg-shaped piece of soapstone, which I stated, in my opinion, had been used as a sinker for a fishing line. Since then I procured three other stones of a somewhat egg-shaped form from the so-called Indian burial ground in Nôtre Dame Bay, one of which confirms, I think, my inference regarding its use. It is a small oval piece of soapstone, 1¼ inch long, pointed at the lower end (Pl. xi. fig. 14*). It has two shallow grooves—one horizontal and the other vertical—for the attachment of a line. On one side of the object there is a hook-shaped projection, which suggests the idea of a combination of sinker and hook for catching small fish. The sinkers without hooks may have been used with the hooks of stone, to be described further on. There is a method of catching lake trout in Canada as follows:—A small leaden sinker is fastened to the end of the line, above which is attached the hook. The sinker rests on the bottom, as in the ordinary Paternoster line.

5. Mr. John Evans, in his standard work on "Stone Implements," places the javelins and arrow-heads under the same heading, and remarks on the difficulty of distinguishing the one class from the other. The excess in numbers of the specimens in my collection, which are usually classed as arrow-heads, over those as to which, from their greater size, some doubt may exist, will make it more convenient to adopt a similar arrangement. Taking as my guide the classification given in chap. xvi. of Mr. Evans's book, I have divided the specimens into the following classes:—(*a*) Stemmed arrow-heads; (*b*) double-barbed triangular ditto; (*c*) abnormal forms.

Class *a*.—Two specimens. The larger one belongs to a kind not unfrequently found in Newfoundland. In my former paper I described one of them (see Pl. x. fig. 1) as a rudely-formed spear or arrow-head of a soft red slate, from Torilinguet Island. Judging from a perfect one of the same kind which I saw at St. Johns, Newfoundland, the one under consideration must have been from five-and-a-half inches to six inches in length, and, therefore, was more adapted from its size to form the head of a spear. The smaller one is of the same type and material as those marked A A A, *loc. ant. cit.*, only the tang is more neatly made.

Class *b*.—In point of numbers and excellence of workmanship, this forms the most important group. The specimens belonging to it show a gradual diminution of length from about three

* The lithographer has unfortunately represented this sinker in an inverted position. The pointed end should be directed downwards.

Fig. 1.

Fig. 2.

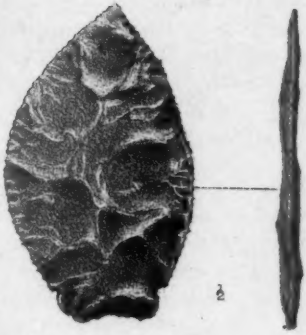


Fig. 3.

Fig. 4.

Fig. 5.

C. F. Kell. Lith. London E. C.

STONE IMPLEMENTS, NEWFOUNDLAND.

inches down to five-sixteenths of an inch. They also differ in the relation of the lengths of the two sides to the base, thus giving to the more elongated forms a straighter contour in the sides than the shorter ones. Their bases are all hollowed out, some more than others (see figs. 9, 10, 11, 12; Pl. xi.). The larger ones have a notch cut in them on either side, near their bases; but in two instances where the bases are not hollowed out, there appear to be two notches instead of one on the same edge. The arrow-heads are made of hornstone and quartzite, which, judging from the finish of some of the specimens, form excellent materials for the purpose. Some of the specimens seem to have undergone the action of fire. One of the arrow-heads of quartzite shows marks of wear near the point. In a paper by Mr. Franks, F.R.S., &c., in the "Trans. Inter. Con. of Prehist. Archæology," for 1868, p. 267, is figured an arrow-head (fig. 1) which much resembles the shorter specimens from Newfoundland, but is apparently not so highly finished. At p. 29, in "Field and Forest Rambles" of Dr. Leith Adams, are figured two notched arrow-heads with square bases, from New Brunswick.

Class *c*.—Three specimens are exhibited. Fig. 3, Pl. x., represents a broad, flat implement of chert, of a somewhat leaf-shaped form. The base, above which are two notches, is slightly hollowed out. It is finely serrated all round the edges. Another specimen exhibited, but not figured, is an unequal-sided spear- or arrow-head, but of hard grey-coloured slate. It is more triangular in outline, and it agrees with it in having a sharp edge, a notch on either side, and a slightly hollowed-out base.

Fig. 13, Pl. xi. is of a triangular form, and of a ruder description than the preceding ones; like them it is notched and hollowed-out at the base. It appears to have been burnt in the fire.

Mem.—In the Christy collection, with one doubtful exception, *all* the notched spear- or arrow-heads are North American.

6. Is a group (of about fifty in number) of the class of implements generally termed "scrapers," for which various uses have been suggested—such as for scraping skin and planing wood; as also for the manufacture of articles of horn and bone, for fabricating arrow-heads and knives of flint, and as strike-a-lights.*

* Mr. John Evans, in the work before quoted, says of North American forms, at p. 362: "The arrow-head with a notch at the base on either side is a prevailing type in North America. The triangular form, usually but little excavated at the base, is also common there. For the most part the chipping is but rough, as the material, which is usually chert, hornstone, or even quartz, does not readily lend itself to fine work. They were made of various sizes, the smaller for boys, and those for men varying in accordance with the purpose to which they were to be applied."

The implements of this description from Newfoundland are more or less of a triangular form (see figs. 4, 5, 6, 7, Pl. xi.). They vary in length from about two inches to half-an-inch. The majority of them are made of hornstone. Two of them, however, are composed of opaque quartz, and one of hyaline quartz (fig. 6. Pl. xi.).

As well as I have been able to judge from a careful examination of their edges, none of them exhibit unequivocal signs of wear, such as I should imagine would be produced by planing wood or any hard substance. Nor do they show a smooth polish on portions of their top and bottom surfaces, such as would result from the process of hafting, like the tools fitted into handles by the Eskimos. The only signs of polish observable have been, probably, produced by blows of a pickaxe when grubbed up.

In some of the larger specimens the smooth surface, which formed the inside of the original flakes, increases in curvature from the butt end to the rounded edge, varying in sharpness of curve with the line of fracture (see fig. 4, Pl. xi.).

A peculiar form of scraper is exhibited. It is equilateral in shape, and shows signs of chipping all round the edges. On the upper and lower sides a portion of the surface is broken in an irregular manner, as if it had been struck by the repeated blows of some pointed instrument. It is, however, difficult, in most cases, to distinguish the marks of original chipping in the process of manufacture from those occasioned by subsequent use.

7. These peculiarly-shaped objects (figs. 1, 2, 3, Pl. xi.) appeared to me, when I first discovered them, likely to have been used as scrapers for rounding the shafts of arrows; but Mr. Franks has suggested they are the points of fish-hooks fastened into shanks of bone, which latter were bound round the end of a slip of wood. Such articles are used by the Eskimos. (See Klemm, "Werkzeuge und Waffen," 1858, p. 61.)

8. These consist of cores of hornstone, a number of flakes and chips, with a quantity of the raw material of quartz, hornstone, &c. Amongst them are some small flakes of transparent quartz, similar to those in the Eskimo case in the Christy collection.

9. Amongst this group, one object particularly attracted my attention on picking it up (Pl. x. fig. 2). It is a thin piece of micaceous slate, about 4 inches long and $\frac{5}{8}$ of an inch broad near the middle, and tapers towards both ends. After removing a portion of the red ochreous coating by washing, an examination showed four groups of small notches, arranged on one side

of the stone, at pretty nearly equal distances apart. The notches are all about the same length.

Besides this, there are two awl-shaped tools of hornstone, somewhat similar in shape to the one figured in "Ancient Stone Implements" (fig. 227, p. 289). They differ from it, however, in the absence of chipping at the sides. One of them shows marks of wear at the point; the other is partially serrated on one side. It is stated in the work above referred to that similar boring instruments of flint have been found in Denmark, in company with scrapers and other tools. The holes in some of the fragments of stone vessels may have been bored with such like instruments. The rubbing stone and flat pieces of slate, apparently whet-stones, do not require any special remarks.

Suggestive remarks on the probable use of the implements belonging to Classes 1, 2, *and* 6.

I premise that the names "axes," "chisels," and "gouges," have been given to certain stone implements from their resemblance to the ordinary forms of such tools of steel as are in use amongst the carpenters of the present day, and I have no doubt that in many cases these terms are applicable to them. In many parts of the world the natives use them for cutting wood and cleaving skulls. The New Zealanders employ them for cutting wood, &c., and in North America the charred trunks of trees are fashioned into dug-out canoes by their means, the hardness of the material giving to them the necessary qualification of a cutting instrument. The implements from Newfoundland belonging to the same classes are, I venture to think, with one exception,* but ill-adapted for such purposes. They are made of a soft and friable stone, and would soon become useless. Schoolcraft (vol. i. p. 91) says: "Fleshing instruments of stone are often mistaken for a small axe." He then goes on to describe a species of hand-chisel, blunt, that it may not cut the skin, and yet of sufficient edge and hardness to permit of a stout, jerking blow. "It required no crease, as if to bind it, and was often of very rude workmanship."

Amongst some notes on the Eskimo seal fishery on the north-east coast of Labrador, given me by Captain Arthur Juckman, of St. Johns, an experienced sealing skipper, I find the following account:—"Having previously 'skulped' (taken out the entrails and removed the skin), the Eskimos separate the fat from the seal's skin with an 'oodloo.' After having dried the

* The "cut-throat," or knife used by the Newfoundland fishermen for splitting codfish, much resembles in shape the quartzite implements found at L'Anse du Diable, Labrador. (See paper on them.)

skin on a frame, they scrape it with an iron instrument about 4 inches long and 3 wide. The tool is bent round into a gouge-like shape, and is fastened by nails or rivets to a wooden handle. The tool is grasped in the middle of the hand, and by a thrusting movement the Indian scrapes away the vellum from the inside of the skin. The part of it under treatment rests on a wooden board lying on the knees of the operator. The hair is taken off by the oodloo."

As another instance of the employment of gouge-shaped instruments in preparing skins, I will mention the method practised by the Montagnards of the interior of Labrador. The instrument, which is called by the Micmac Indians "Saskadedagan," some few of whom use it in preference to the ordinary "Jee-ge-gan," or scraper, is made by chopping through the leg-bone of a bear in an oblique direction.* The rounded end thus produced is notched with a file, so as to form a serrated edge. A quantity of shot is then plugged up in the hollow of the bone, to give it weight. A strap of sinew or a cord is passed through two holes bored in the articular end of the bone. The implement is used in the following manner:—The deerskin is first of all thrown over a post stuck upright in the ground. A fold of it is then grasped tightly in the left hand, and drawn in a slanting direction towards the body. The tool is then grasped in the middle of the right hand, with the strap passing round the wrist, to prevent the hand from slipping, and the operator detaches the vellum from the part of the skin above the left hand by a series of sharp downward blows.†

The Red Indian Pond trapper, Johnny Joe, told me he had used stone "gouges" found in Newfoundland for breaking holes in the ice to catch beavers. The ordinary tool for the purpose, as supplied by the Hudson's Bay Company to the Indians of Canada, is a common carpenter's chisel. Peculiar shaped chisels, of hammered copper, have been found in the district of the Ottawa river, which are supposed to have been used for a like purpose.

If the relative forms of the stone implements and the other tools

* For drawings of the Saskadedagan and Jee-ge-gan, see the author's paper on the 'Caribou of Newfoundland,' in final part of the "Reliquiæ Aquitanicæ," about to be published.

† The "Jee-ge-gan" is made out of the marrow-bone (metatarsal) from a deer's hind leg. The bone is split open with an axe for a portion of its length. The edge to be used for scraping is then thinned down to a sharp bevel on either side. The tool is grasped in both hands, and is pushed forwards against the skin with the scraping edge square with its surface. The skin is laid upon a post driven obliquely into the ground.

The Inland Columbians dress skins by spreading, scraping off the flesh, and, for some purposes, the hair, with a piece of bone, stone, or iron, attached to a short handle, and used like an adze. (Bancroft, p. 271.)

just described be taken into consideration, and allowance made for the softness of the material, in most cases, I think, we shall not be far wrong in arriving at the conclusion that the chisel-shaped instruments were used, amongst other purposes, for skinning seals and other animals of the chase; while the gouge-shaped tools served for removing the vellum from the skins, and both kinds were of service in hollowing out the vessels from the soft material of which they were composed. The question may be asked, "How did the 'stone people' cut their wood for firing?" In answering this question, it must be borne in mind that the semi-civilised Indian of North America, even with his tomahawk of steel, is very economical in the matter of wood. When camping without the company of the white man, who requires plenty of warmth, a few boughs are sufficient to make him a comfortable fire. His reply to the question, "Why do you not make a larger fire?" is, "Large fire no good; can't get near large fire; small fire, creep close." So that tools for hewing down trees to make big fire logs are not indispensable. It is a singular circumstance that no stone implements, as far as I am aware, have hitherto been found on the old camping grounds of the Beothucs in the interior of the island.

In the description given by Cormack of the interior of a "Red Indian" grave, no mention is made of any stone implements amongst the various articles deposited therein. (See "Journ. Anthrop. Inst.," vol. iv. p. 32.)

The Scrapers.—These form a series of implements of the hardest kind of stone, and are characterised by a similarity of form and style of workmanship. They vary in size down to such as can be conveniently grasped between the thumb and fore-finger. The planes of their working forces meet at angles, which make them more suited for abrasion by a backward than by a forward movement of the hand. The hardness of the material may account in a measure for absence of any unequivocal sign of wear, and their mode of occurrence will render it probable that some of them at least had not been turned out of the work-shop. I therefore venture to hazard the opinion, that amongst other uses to which they may have been destined, were the fashioning of arrow- and spear-shafts, much in the same way as broken glass is used at the present day. Although it may be objected that a square edge would have served such a purpose better, the wide application of tools for scraping purposes would not admit of forms specially adapted for one class of operation. They may also have served for scraping the vellum from the skins of such small animals as the beaver, musk rat, and hare. Whether they were also employed in the fabrication

of arrow- and spear-heads, I do not feel competent to form an opinion.

At this stage of the inquiry the question naturally arises, Who were the makers of the stone implements? According to the accounts of the early navigators who visited Newfoundland, it appears that the savages of the island painted themselves of a roan colour, used bows and arrows and spears, and killed a great store of the various animals of the chase. At that period, I imagine, they used only arrow- and spear-heads of stone. In later times, long after the first settlement of white people on the island, and when the "red men" had learnt, to their cost, the abuse of firearms, in exchange for the articles of iron and other metal which they pilfered from their merciless enemies, we hear they manufactured stone pots, and made use of stone implements in preparing skins, and found out the superior qualities of the steel axe and iron arrow-heads.

A comparison of the stone implements found in various parts of Newfoundland with those used by the Eskimo on the one hand, and others found in many parts of the American continent, shows that they have, as a whole, certain characters common to both classes. For instance, the chisel and gouge-shaped tools are of a type prevailing over a great part of North America. The arrow- and spear-heads exhibit no very distinctive forms, although those having notches in them are of the North American type. The scrapers, fish hooks, and stone vessels resemble those in use amongst the Eskimo. The latter were, it appears, manufactured in late times by the Beothucs, according to Mr. Peyton.

Sinkers of stone are used in trawling by the fishing Indians of Vancouver Island, and have been found in several places in North America. (See Evans, p. 212.)

The absence of any remains of earthenware in Newfoundland affords but little assistance in the inquiry, since amongst the Assineboines and the Eskimo the art of pottery-making is not known.

Any surmises regarding the age of the Indian relics from Sop Island and Conche Harbour must necessarily be vague, because the amount of time required for the accumulation of a covering of vegetable soil of a certain thickness cannot be accurately determined. The discovery of a musket-ball gives us no data to go by. However, as no articles of European manufacture have yet been found amongst the stone implements, we may, for the present, infer that they belong to a period antecedent to the settlement of Europeans on the island.

If it be allowable to draw any conclusions regarding the ethnic relations of different tribes inhabiting adjacent countries,

from the similarity or dissimilarity of their implements, it seems that the evidence is pretty equally divided between the Eskimo and the Beothucs. (I have omitted any mention of the Montagnards and Nasquapees in this connection, because I have failed in obtaining any information of their employment of stone implements.)

In default then of any existing knowledge of the occupation of Newfoundland by the Eskimo, although it is stated by Cartwright that they used to visit the shores of the island, as the Montagnards do now occasionally, I think that the balance of the evidence is in favour of the Beothucs as the aboriginal stone-folk of Newfoundland.

It will be seen from the preceding account of the aborigines of Newfoundland, that the "Beothucs," or Good-night Indians, possessed, in many respects, characteristics belonging to many of the tribes inhabiting the North American continent, whilst, on the other hand, they appeared to differ from them in certain peculiarities, which were as follows:—

1. Lightness of complexion.
2. The use of trenches in their wigwams for sleeping places.
3. The peculiar form of their canoes.
4. The custom of living in a state of isolation far apart from the white inhabitants of the island, and their persistent refusal to submit to any attempts to civilise them.
5. The non-domestication of the dog amongst them.
6. The art of making pottery was unknown amongst them.

In any endeavour to reconcile the peculiar characteristics of the Beothucs with those which mark other North American tribes, we must bear in mind the following circumstances:— Lightness of complexion cannot be considered as a distinctive mark of difference of race. Amongst the North American Indians are found tribes varying considerably in depth of colour, the copper-coloured tinge being peculiar to some of them, whilst others are not darker than Spanish gipsies.* See Haidahs of British Columbia and other coast races described in Bancroft's book.

The trenches used as sleeping places were probably designed for protecting the inmates of the wigwams, in case of surprise by their enemies, the white fishermen and Micmac Indians, and also as a shelter from the inclement winds of the spring and fall. The bank outside the trench would assist in keeping off the wind, which blew through the chinks in the birch-bark lining. In

* I have not included the practice of using unguents and painting with ochre amongst the peculiarities of the Beothucs, because similar customs are practised amongst existing tribes of North America.

camping out in the snow in Canada, I have experienced the good effect of a bank of snow piled up around the camp.*

The peculiar shape of their canoes was probably due, as I stated in my former paper, to an adaptation of form to circumstances. The Beothucs, who passed their summers on the sea coast, would require a boat capable of withstanding an ordinary sea, and well adapted for steering when used with a sail. A birch-bark canoe, having the ordinary rounded form of bottom and lowness of gunwale, would not be sufficiently seaworthy, I should imagine, for making such voyages as to Funk Island in search of Great Auks and the eggs of various sea birds.

The statement that the canoe could be folded up like "a cocked hat" seems to be a doubtful one. Even if it were capable of such an alteration in form, I do not think it would have added much to its portability.†

It is difficult to account for the fact that the dog was unknown amongst them, unless on the supposition that the Newfoundland dog of the island is not indigenous, but is merely the degenerate descendant of the "distinguished members of the Humane Society" belonging to the British Isles. It may have been introduced by the early colonists from England.‡ However that may be, so useful an animal to man is almost invariably found in company with the savage of America, and its remains have been discovered in association with those of prehistoric man in Europe. Even supposing the above supposition to be a correct one, it still remains a remarkable circumstance that the Beothucs should not have obtained it from their friends the Montagnards of Labrador.

The practice of making pottery is by no means universal amongst the Indians of the American continent. It is unknown amongst the Eskimo. The Apinulboines (or stone boilers) of the north-west, and the Montagnards of Labrador (according to Hind), make use of birch-bark cooking vessels, in which the water is heated by throwing in hot stones; it may be inferred that such a contrivance would scarcely be adopted by them if

* "The Kouragas make tomb-like excavations round the sides of the room, where the occupant reposes on his back, with his knees drawn up to the chin." —(Bancroft, p. 74.)

"The Aleuts sleep in a kind of concave trench, which is dug all round the inside of the house." (Bancroft, p. 89, in a note.)

† Bancroft says of the dug-out canoes of the Puget Sound Indians: "The form varies amongst different nations according as the canoe is intended for ocean, sound, or river navigation, being found with bow and stern, or both, in various forms—pointed, round, shovel-nosed, raised, or level." (See Swan's "North-West Coast," pp. 79—82.)

‡ I am inclined to believe that such may be the case. The wolfish appearance of the Indian dog of North America contrasts strongly with that of the Newfoundland dog of both hemispheres.

they were acquainted with the art of manufacturing earthenware vessels.* The stone pots of the Beothucs appear to have been used for boiling deers' fat in, and may also have been used as lamps, like those of the Eskimo. As far as I am aware, none have been found sufficiently large for ordinary cooking purposes. They may have been used for boiling the tallow in the preparation of the pemmican before described.

The branches of the great Algonkin nation, recent and modern, include the aborigines of Montreal, the Chippeways and Crees of the north-west of Canada, the Montagnards and Nasquapees of Labrador, besides the Ottawas and Abenakis. In short, they embrace the whole of the Indian tribes, extending from beyond the head of Lake Superior to the Atlantic coast, with the exception of the Eskimos. To endeavour to trace out the origin of the Beothucs from among such a numerous assemblage of different tribes, having many characteristics in common, would be waste of time.

Some have, however, indulged in the supposition that the Beothucs originally came from Scandinavia. But before seeking for traces of them in so distant a source, it appears to me a more rational proceeding to attribute their probable origin to some ancient migration of a branch of the Algonkin nation, caused by their having been driven out by war, as in the case of the historical dispersion of the aborigines of Montreal by Iroquois and Hurons.

Some of the peculiarities which distinguished the Beothucs from other Indians of the Western Continent were of a kind such as might easily have arisen amongst a people debarred for a long period from free communication with other tribes. Others, in all probability, resulted from an alteration in external circumstances, which necessitated changes of habit and modes of life. In fact, they were an adaptation of requirements to means, such as might have originated among a people formerly living in the interior of a continent, but now compelled to obtain a livelihood under such altered conditions as an insular life would necessitate.

Regarding their ultimate fate, there is less difficulty in forming a reasonable conjecture. Amongst the various reports thereon to be found in the foregoing pages, those which seek to attribute their sudden disappearance to having perished on the island bear the strongest marks of truth about them, and the signi-

* Since writing the above, I have been informed that there are some boiling stones which belonged to the Beothucs in the Edinburgh Museum. They were presented, along with two skulls, to the late Professor Jameson, by Cormack, the explorer.

ficant fact, that about that time there only remained of them fourteen individuals. It may, I think, be reasonably concluded that these few poor wretches, forced to leave their habitations and wander about during the severity of winter, eventually died of starvation on the island; thus affording another instance of a people "improved off the face of the earth by the bearded stranger from the rising sun."

My best acknowledgments are due to Mr. A. W. Franks for much advice and assistance during the preparation of the foregoing pages; and to Professor Busk, for the descriptions and drawings of the Beothuc skulls. I am also much indebted to Mr. John Evans for his valuable work on "Stone Implements," without which I should not have attempted the task of describing the stone implements of Newfoundland.

EXPLANATION OF PLATES IX. TO XI.

Plate IX.

Map of Conche Harbour, on the north-east coast of Newfoundland. The spot where the stone implements represented in the succeeding plates were found is indicated by a small cross.

Plate X.

Fig. 1. Broken spear-head of soft red slate, one-half natural size. 2. Fragment of micaceous slate, exhibiting four groups of small notches on the sides, one-half natural size. 3. Thin, broad, leaf-shaped arrow-head of chert, with finely-serrated edges, one-half natural size. 4. Chisel or axe of chloritic slate, one-third natural size. 5. Gouge-shaped tool; the hollowed-out end is directed upwards in the figure; the other end has been ground to an edge; one-third natural size.

Plate XI.

Figs. 1 to 3. Stone objects, probably the points of fish-hooks. 4 to 8. Various forms of stone scrapers. 9 to 12. Triangular stone arrow-heads, with hollowed-out bases. 13. Triangular stone arrow-head, hollowed out at base, and notched on each side. 14. Soapstone sinker for fishing net; the pointed end should have been directed downwards.

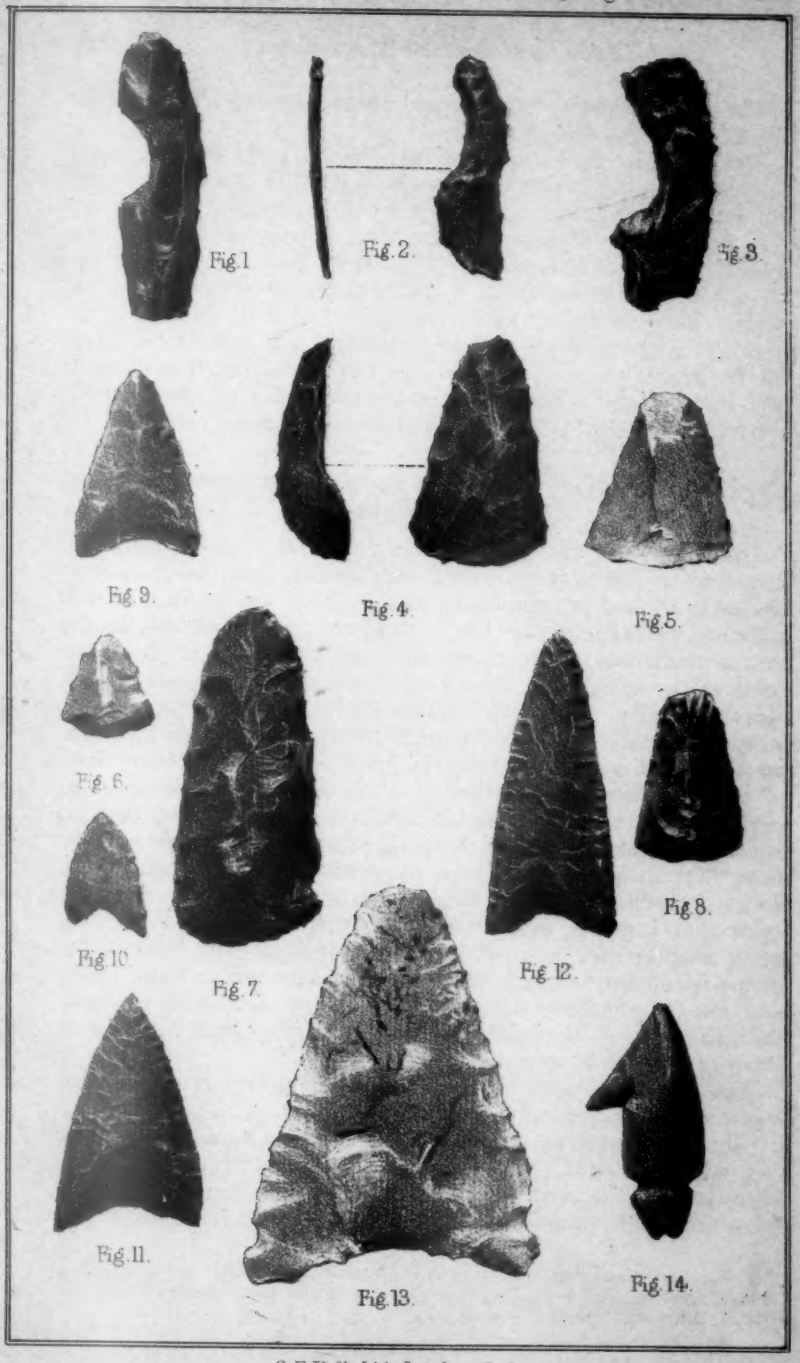
N.B.—All the objects in Pl. xi. are figured of natural size.

Mr. PARK HARRISON exhibited a series of Photographs of Easter Island Tablets, and read the following note:—

NOTE *on five* HIEROGLYPHIC TABLETS *from* EASTER ISLAND.

By J. PARK HARRISON, M.A.

THE discovery of three incised tablets of hard wood in some of the houses in Easter Island was alluded to in this Journal, and a



C. F. Kell, Lith. London, E. C.

STONE IMPLEMENTS, NEWFOUNDLAND.

(Full Size)

minute description of them given two years ago. Since then I had obtained from Mr. Croft, a resident in Papetee, photographs of five others, from four inches to three feet in length, which had been received subsequently by the French mission in Tahiti from Easter Island. It appears from the letter that accompanied them that these tablets were once very numerous; but owing to intestine wars, and the anxiety of the Roman Catholic missionaries to destroy all relics of heathenism, many have been burnt. Natives of Easter Island say that some of these tablets contained a portion of the ancient history of the island, its kings and chiefs; others mythological legends and heathen prayers; and some, directions for fishing and planting. It appears that the art of deciphering the signs was confined to the priests and some few others, who are supposed to be now dead. An Easter Islander in Tahiti professed to be able to read the hieroglyphics, but, on being shown one of the tablets, was unable to do so. He had been partially instructed when quite a boy, but could only say that the signs represented "ideas and sentences."

As one of the tablets, now at Santiago, of which plaster casts are preserved in the Museum of the Institute, appeared to me to be pictorial, I sent copies of the heliotypes that had been taken of it to Tahiti, to see if any of the Easter Islanders could explain the signs upon it; and find, from a letter just received in reply, that the tablet alluded to is one of those that "says a good deal about their chiefs," and that some of the explanations I offered are correct. Further information is promised.

It will be remembered that one of the scenes that it appeared probably were purely pictorial, was a festival such as often occurs in the Pacific when a great haul of fish is obtained. The natives are seen dancing separately, some of them holding fishes in their hands, whilst an attempt to represent distinct kinds of fish is recognisable. Two pillars, each one with an arm attached to it, appear to have been "set up for the spirits,"* and may possibly be sun and moon-stones. Figures of a different type from the natives who are engaged in the dance are standing by.

Another picture seems intended to represent a procession of bird-headed men who are approaching a pillar with circles on each side of it.

It need scarcely be added, that great interest attaches to these tablets, owing to the fact that nothing of the kind has been met with hitherto in the Pacific, and they are found associated with circumstances that point to a survival of an early state of civilisation. According to the legends of the islanders, and pre-

* See Sir G. Grey's "Polynesian Mythology," page 214.

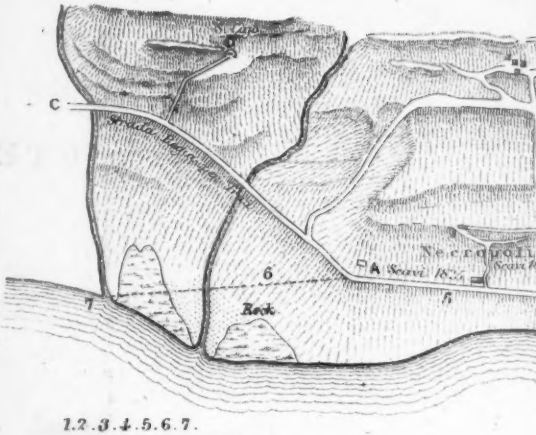
served probably by their engraved tablets, they came from the West in large vessels. There is reason to believe that many more tablets still exist in the island; the natives, who are dying out fast, attach the greatest value to them, and carefully conceal them.

The signs in the photographs exhibited on this occasion are symbolic, and appear to be connected with the mythology of the islanders.

Mr. BOUVERIE-PUSEY remarked, that he had read somewhere that picture-writing existed in the Caroline Islands. As there was every reason to suppose a connection between the extinct culture of Easter Island and that of Micronesia, he thought it would be an interesting subject for investigation whether any affinity existed between the hieroglyphics of the two places.

Mr. E. B. TYLOR thought the number of Easter Island inscriptions now collected would justify the investigation being carried into the second stage—that of tabulating the various pictures or symbols employed, to ascertain how often and in what connection they occurred. He called attention to some which had ceased to be pictorial, and had passed into regular symbolic characters, repeated from time to time with variations.

Mr. GEORGE ST. CLAIR said, that one of the figures bore some resemblance to the eagle-head deity in the Assyrian sculptures, making an offering to the sacred tree. This might indicate a connection, if not between the peoples, between their mythologies; and he thought it was not the only point where the mythologies seemed to touch.

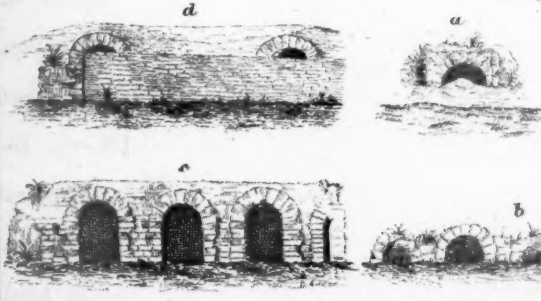


1.2.3.4.5.6.7.
Tracings of the Old Wall.

SENO SALON

Scale of 500 Meters.

0 50 100 200 300 400 500



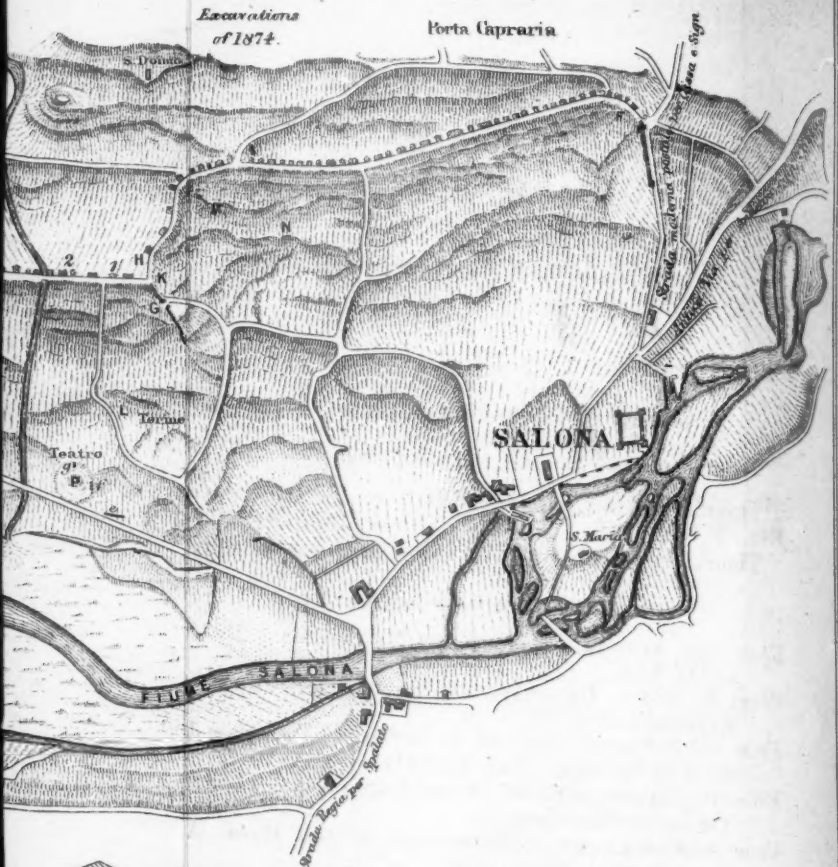
PLAN OF THE

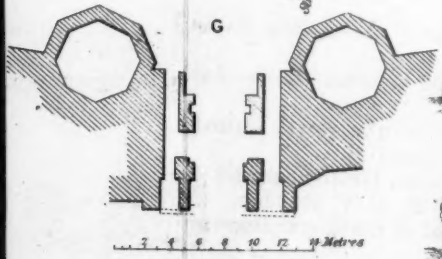
Amphitheatre

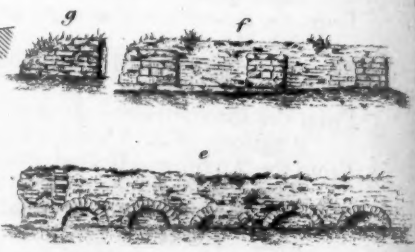
Scale of 60 Metres.

0 8 10 20 30 40 50 60

PLAN OF THE







PLAN OF THE CÆSARIAN GATE.

C. F. Kell Lith. London E.C.